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Vanilla HTML Offline AI — v0.3

Privacy: No network calls, no PII collection, on-device only.

Even simple AI algorithms—when carefully chosen and combined—can produce a surprisingly powerful and reliable system. The integration of **k-NN, RLS, and Thompson Sampling** demonstrates this principle clearly, particularly when the system is optimized for a specific use case and operational context. Here's a breakdown of why this combination works so well.

1. Their Roles Are Different but Perfectly Complementary

Each of the three algorithms plays a distinct role, and together they form a compact yet intelligent system capable of perception, adaptation, and decision-making.

k-NN serves as the system's initial "sensing" mechanism. When a new signal arrives, it compares that signal to previous cases and asks, *"Have we seen something like this before?"* This enables quick, intuitive classification based on similarity. It works especially well in situations where historical data, even if limited, can guide real-time judgments.

RLS, or Recursive Least Squares, brings real-time adaptability to the table. Whenever human feedback is provided—such as a confirmation or dismissal of an alert—the system immediately incorporates that input by updating its internal parameters. This gives the AI the ability to evolve in real time, even with limited data. It essentially learns on the fly, making it ideal for dynamic field conditions where new signals constantly emerge and expert feedback is available in the loop.

Thompson Sampling provides the decision-making backbone. Based on probability distributions, it helps the system choose whether to issue a warning now or wait for more information. It manages uncertainty by balancing the need to "explore" (gather more evidence) against the need to "exploit" (act on what is known). This kind of probabilistic reasoning is crucial in humanitarian or emergency scenarios where false alarms can be costly, but missed signals can be fatal.

Combined, these three elements—**k-NN for sensing**, **RLS for learning**, and **Thompson Sampling for deciding**—create an AI engine that is surprisingly coherent and effective. It mirrors the logic of human decision-making: observe, learn, and act—with feedback loops continuously improving the results.

2. Built to Thrive in Constraint-Heavy Environments

This trio of algorithms excels in conditions where high-end resources are unavailable. It is particularly useful:

- When data is sparse or must be acted upon in real time.
- In locations with no access to servers, cloud infrastructure, or consistent electricity.
- In ethically sensitive domains where every decision must be explainable and auditable.

Although this AI setup wouldn't be suitable for complex tasks like generating images or interpreting language at scale, it is exceptionally well-suited for tasks such as anomaly detection, field alerts, and feedback-driven refinement—making it ideal for disaster response, humanitarian aid, and safety-critical systems.

3. Simple Architecture, Powerful Results

What makes this system even more valuable is its simplicity. All three algorithms:

- Are mathematically sound and widely trusted.
- Can be implemented in plain code without reliance on massive libraries.
- Are transparent, with clearly traceable inputs and outputs.

This means they can run even on very low-powered devices—like old smartphones or microcontrollers—and still perform the full cycle of detecting a signal, issuing an alert, and updating behavior based on field feedback.

"Simple, But Strong Enough"

When simplicity is aligned with purpose, basic algorithms can outperform heavyweight models—particularly in speed, reliability, and safety. The trio of k-NN, RLS, and Thompson Sampling proves that AI doesn't need to be enormous to be effective.

If deep learning models are like heavy-duty trucks, this setup is more like a rugged motorbike—built for agility and survival in rough terrain. And in many of the world's most vulnerable places, that's exactly the kind of AI that's needed most.

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54KB HTML
1. k-NN AI
2. RLS AI
3. Thompson Sampling AI

First, this system is a **lightweight offline AI demo** that displays country-level safety and travel risk. It combines two machine-learning methods,
`k-NN` (k-nearest neighbors) and `RLS` (Recursive Least Squares). Each country is represented by features such as cost, language difficulty, currency exchange, risk keywords,
and credit ratings. These are turned into vectors, and the AI predicts safety grades using similarity (k-NN) and regression adaptation (RLS).

Second, `k-NN` works by finding countries with similar characteristics and averaging their safety grades to make predictions. For example, if a country has similar costs, language difficulty, and crime patterns to its neighbors, the model infers its safety

level from those neighbors.

Third, `RLS` is an online regression learner. Each new observation updates the model’s weights and covariance matrix, allowing it to adapt rapidly. As more data are seen,
predictions for those countries stabilize, while new entries are quickly absorbed. A forgetting factor (half-life) ensures that old data lose influence and recent data dominate the model.

Fourth, a **probabilistic decision-making AI** based on the Beta-Bernoulli posterior is added. Each country’s malaria risk is modeled as binary outcomes: “detected” or “not detected.”
Initially, risk is represented by a neutral Beta(1,1) prior. Each detection increments the success count, each non-detection increments the failure count, producing a posterior Beta(1+s, 1+f).
The mean (1+s)/(2+s+f) directly gives the risk probability as a percentage. Using Thompson Sampling, the AI draws samples from this posterior; if a sampled probability exceeds a threshold,
it displays a “Caution” badge. Mosquito counts slightly increase the success weight, while old data are discounted with time decay.

Fifth, these three engines represent different paradigms of intelligence:

* **k-NN**: case-based reasoning through similarity.
* **RLS**: adaptive regression that learns continuous signals in real time.
* **Beta-Bernoulli + Thompson Sampling**: probabilistic decision-making that balances exploration and exploitation automatically.

With few observations, uncertainty is high and the system explores more. As samples accumulate, the posterior sharpens and the AI exploits more confidently. This makes it look like a decision-making AI that learns from data.

In summary, inside this single HTML page, three distinct AI engines operate side by side:

1. k-NN for similarity-based prediction.
2. RLS for online adaptive regression.
3. Beta-Bernoulli with Thompson Sampling for probabilistic decision-making.

Together, they transform a simple offline demo into an AI that not only makes predictions but also
learns, updates, and changes its decisions in real time—all without servers or external data.

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<style>
:root{color-scheme:light dark}
/* --- Layout for the floating rail --- */
@media (min-width:992px){#infoRail{position:fixed;left:14px;top:150px;width:160px;z-index:10001;transition:width .22s ease}#infoRail:hover,#infoRail:focus-within{width:min(380px,36vw)}}

```
@media (max-width:991.98px){#infoRail{position:fixed;left:10px;bottom:12px;width:min(75vw,280px);z-index:10001;transition:width .22s ease}#infoRail:hover,#infoRail:focus-within{width:min(100vw,560px)}}

/* --- Card --- */
#box{background:#fffbea;border:1px solid rgba(0,0,0,.12);border-radius:10px;box-shadow:0 6px 14px rgba(2,6,23,.08);overflow:hidden;font:.8rem/1.4 system-ui,-apple-system,"Segoe UI",Roboto,Arial,sans-serif;color:#0b1221;transition:max-height .24s ease,opacity .18s ease,box-shadow .18s ease,transform .18s ease;max-height:var(--collapsed-h,424px);position:relative;opacity:.96;isolation:isolate;will-change:max-height,transform}
#box header{padding:6px 8px;font-weight:800;background:linear-gradient(180deg,#fffbea,#fff7d6);border-bottom:1px solid rgba(0,0,0,.08);font-size:.82rem;display:flex;align-items:center;gap:8px;flex-wrap:wrap}
#box header>.title{color:#0b3d91;font-weight:900}
#box #title{font-size:.85rem!important;line-height:1.22;font-weight:900;color:#0b3d91;text-align:center;width:100%}
#box .row{padding:6px 8px}
#box:hover,#box:focus-within,#box.active{box-shadow:0 10px 22px rgba(2,6,23,.12);transform:translateY(-1px);max-height:var(--expanded-h,1200px)}
#controls{display:grid;grid-template-columns:1fr auto auto;gap:6px;align-items:center}
#q{min-width:0;flex:1;padding:4px 6px;border:1px solid rgba(0,0,0,.16);border-radius:8px;outline:none;font-size:.72rem}
#riskBtn{padding:4px 8px;border-radius:8px;border:1px solid #e8b7b7;background:#ffe1e1;color:#7a2a2a;font-weight:800;cursor:pointer;font-size:.72rem}
#aiBtn{padding:4px 8px;border-radius:8px;border:1px solid #9ad1f3;background:#e6f4ff;color:#084c61;font-weight:800;cursor:pointer;font-size:.72rem}
#name{font-weight:800;color:#0b1221}
.badge{font-weight:800}.green{color:#16a34a}.black{color:#0b1221}.red{color:#b01919}.brkt{font-weight:700}
#desc{color:#0b0f19;font-weight:700;font-size:.78rem;display:-webkit-box;-webkit-line-clamp:3;-webkit-box-orient:vertical;overflow:hidden;text-overflow:ellipsis}
#more{font-size:.72rem;color:#0b1221}
#period{font-size:.72rem;opacity:.95;margin-top:2px}
.sr-only{position:absolute;width:1px;height:1px;padding:0;margin:-1px;overflow:hidden;clip:rect(0,0,0,0);white-space:nowrap;border:0}
#infoRail:hover #desc,#infoRail:focus-within #desc{display:block;-webkit-line-clamp:unset;-webkit-box-orient:unset;overflow:visible}
#infoRail:hover #more,#infoRail:focus-within #more{overflow:visible}
.ai-note{margin-top:6px;opacity:.98}
.ai-note small{display:block;font-size:.68rem;opacity:.9;margin-top:2px}
.ai-grid{display:grid;grid-template-columns:1fr;gap:6px}
.ai-grid .chip{display:inline-block;padding:2px 6px;border-radius:999px;border:1px solid rgba(0,0,0,.12)}
.ai-grid .muted{opacity:.9}
/* keep bottom ticker below the rail */
#bottom-ticker{z-index:9999}
</style>
```

```
<aside id="infoRail" aria-label="Sticky world travel ticker">
  <div id="box" role="group">
    <header>
      <div class="title" id="title">
        <a href="diplomacy(1).html" style="color:#0b77d5;text-
decoration:underline">44kb Offline AI click</a>
      </div>
      <div id="period">A world-class, ultra-lightweight on-device k-NN AI demo</div>
    </header>

    <div class="row" id="controls">
      <input id="q" list="countries" placeholder="Country… (ex. America or USA)"
autocomplete="off"/>
      <datalist id="countries"></datalist>
      <button id="aiBtn" type="button" title="Toggle AI (k-NN + RLS)">AI:
OFF</button>
      <button id="riskBtn" type="button" title="Show risky countries">Risk</button>
    </div>

    <div class="row" id="view" aria-live="polite">
      <div id="name">—</div>
      <div id="rank">—</div>
      <div id="grade">—</div>
      <div id="desc">Choose a country or press Risk.</div>
      <div id="more"></div>
    </div>

    <div id="sr" class="sr-only" aria-live="polite"></div>
  </div>
</aside>

<script>
(function(){
  const TOK=[
    'France|1|A-|Expensive|Moderate|Easy|Pickpockets|Transit scams|Book top
museums in advance to avoid lines',
    'Spain|2|B+|Moderate|Moderate|Easy|Bag snatch|Beach theft|Use lockers and
keep bags zipped on metros',
    'United States|3|B|Expensive|Easy|Easy|Car break-ins|Card fraud|Use park-and-
ride and tap-to-pay where possible',
    'China|4|B|Moderate|Difficult|Moderate|Taxi scams|Tea scams|Use official apps
and avoid unsolicited invites',
    'Italy|5|B+|Moderate|Moderate|Easy|Station pickpockets|Distraction|Board trains
early and keep bags in sight',
    'Turkey|6|B|Cheap|Moderate|Easy|Taxi overcharge|Counterfeits|Use Istanbul
cards and official taxis',
    'Mexico|7|B-|Cheap|Moderate|Easy|ATM skimmers|Beach theft|Use ATMs inside
banks and hotel safes',
    'Thailand|8|B|Cheap|Moderate|Easy|Tuk-tuk scams|Gem scams|Agree prices
before rides and avoid “free” tours',
    'Germany|9|A-|Expensive|Moderate|Easy|Festival theft|Transit pickpockets|Use
inside pockets at events',
    'United Kingdom|10|A-|Expensive|Easy|Easy|Phone snatch|Ticket fraud|Pay
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contactless; avoid unofficial sellers',
'Japan|11|A+|Moderate|Moderate|Easy|Bar scams|Lost items|Use IC cards and official night venues',
'Austria|12|A|Expensive|Moderate|Easy|Tram pickpockets|Tour scams|Validate tickets and keep bags front-facing',
'Greece|13|B|Moderate|Easy|Moderate|Taxi scams|Rental issues|Use licensed ferries and check rental contracts',
'Malaysia|14|A-|Cheap|Easy|Easy|Snatch theft|ATM skimmers|Use ride-hail and keep bags cross-body',
'Korea, Republic of (South Korea)|15|A|Moderate|Moderate|Easy|Phone scams|Transit crowding|Use T-money and keep devices secure',
'Hong Kong|16|A-|Expensive|Easy|Easy|Market pickpockets|Phone scams|Use Octopus card; ignore unsolicited calls',
'Netherlands|17|A-|Expensive|Easy|Easy|Bike theft|Station theft|Lock bikes twice and watch bags',
'Portugal|18|B+|Moderate|Moderate|Easy|Car break-ins|Pickpockets|Empty cars at viewpoints; use city lots',
'Saudi Arabia|19|A-|Moderate|Moderate|Easy|Legal issues|Traffic fines|Respect local laws and speed cameras',
'United Arab Emirates|20|A|Expensive|Easy|Easy|Traffic fines|Heat stress|Use Nol card and plan indoor breaks',
'Canada|21|A-|Expensive|Easy|Easy|Car break-ins|Phone theft|Keep gear out of sight at trailheads',
'Australia|22|A-|Expensive|Easy|Easy|Beach theft|Sun risks|Use Opal/Myki; observe surf flags',
'New Zealand|23|A|Expensive|Easy|Easy|Trailhead theft|Rural hazards|Leave no valuables in cars',
'Singapore|24|A+|Expensive|Easy|Easy|Fines|Littering fines|Know local rules; e-payments everywhere',
'Switzerland|25|A|Expensive|Moderate|Easy|Station theft|Crowd scams|Use Half-Fare; keep bags close',
'Czechia|26|B+|Moderate|Moderate|Easy|Exchange scams|Old town theft|Use ATMs in banks; avoid street changers',
'Ireland|27|A-|Expensive|Easy|Easy|Nightlife theft|Phone snatch|Use inside pockets in busy streets',
'Belgium|28|A-|Expensive|Easy|Easy|Station theft|Festival pickpockets|Keep zips forward in crowds',
'Norway|29|A|Expensive|Easy|Easy|Weather|Bike theft|Prepare for weather; lock bikes',
'Sweden|30|A|Expensive|Easy|Easy|Bike theft|Festival theft|Tap-to-pay and watch bags',
'Indonesia|31|B|Cheap|Moderate|Easy|Taxi overcharge|Beach theft|Use Blue Bird or apps; count change',
'Vietnam|32|B|Cheap|Moderate|Moderate|Motorbike snatch|Tour scams|Keep phones inside; book reputable tours',
'Taiwan|33|A-|Moderate|Moderate|Easy|Market theft|Typhoons|Carry cash lite; monitor weather',
'Morocco|34|B|Cheap|Moderate|Moderate|Souk hustles|Taxi overcharge|Use petit taxi meters; negotiate first',
'Argentina|35|C+|Cheap|Moderate|Moderate|Card skimming|Night theft|Use bank ATMs; keep small cash',
'Chile|36|B+|Moderate|Moderate|Easy|Terminal theft|Protests|Use official buses; check advisories',
'Croatia|37|B+|Moderate|Easy|Easy|High-season scams|Parking scams|Pay

official lots; confirm bookings',
'Poland|38|B+|Moderate|Moderate|Easy|Exchange issues|Old town theft|Avoid street kiosks; use banks',
'Denmark|39|A|Expensive|Easy|Easy|Bike theft|Night pickpockets|Register bikes; tap-to-pay',
'Finland|40|A|Expensive|Easy|Easy|Winter risk|Bike theft|Dress for cold; secure bikes',
'Iceland|41|A-|Expensive|Easy|Easy|Weather shifts|Road ice|Book 4x4 in winter; check forecasts',
'Slovenia|42|A-|Moderate|Easy|Easy|Trail mishaps|Car break-ins|Validate vignettes; park in lit areas',
'Slovakia|43|B+|Moderate|Moderate|Easy|Pickpockets|Ticket checks|Validate tickets; carry small cash',
'Hungary|44|B+|Moderate|Moderate|Easy|Taxi overcharge|Bar scams|Use licensed taxis; check menus',
'Romania|45|B|Cheap|Moderate|Moderate|ATM skimmers|Rural driving|Use bank ATMs; drive by day',
'Bulgaria|46|B|Cheap|Moderate|Moderate|Tram checks|Taxi overcharge|Use official apps; keep tickets',
'Serbia|47|B|Cheap|Moderate|Moderate|Night theft|Unmetered taxis|Use app cabs; stay lit streets',
'Montenegro|48|B|Moderate|Moderate|Moderate|Parking scams|Coastal theft|Use guarded lots; early starts',
'North Macedonia|49|B|Cheap|Moderate|Moderate|Market theft|Night buses|Use tourist shuttles; day travel',
'Albania|50|B-|Cheap|Moderate|Moderate|Road rules|Beach theft|Prefer daylight drives; secure parking',
'Bosnia and Herzegovina|51|B-|Cheap|Moderate|Moderate|Memorial sensitivity|Road hazards|Use marked routes; respect sites',
'Malta|52|A-|Expensive|Easy|Easy|Beach theft|Heat|Use lockers; hydrate',
'Cyprus|53|A-|Moderate|Easy|Easy|Road left|Beach theft|Drive left; watch currents',
'Luxembourg|54|A-|Expensive|Easy|Easy|Pickpockets|None major|Use free transit; central stays',
'Monaco|55|A-|Expensive|Easy|Easy|Price shocks|Pickpockets|Day-trip by train from Nice',
'Andorra|56|A-|Moderate|Moderate|Moderate|Winter roads|Altitude|Carry chains; fuel early',
'San Marino|57|A-|Moderate|Moderate|Moderate|Crowd theft|Steep paths|Wear grip shoes; day-trip via Rimini',
'Lithuania|58|A-|Moderate|Easy|Easy|Old town theft|Ticket checks|Tap-to-pay; validate tickets',
'Latvia|59|A-|Moderate|Easy|Easy|Nightlife theft|Station theft|Keep bags front; use city passes',
'Estonia|60|A-|Moderate|Easy|Easy|Bike theft|Winter ice|Lock bikes; walk carefully in ice',
'Jordan|61|B|Moderate|Easy|Moderate|Desert hazards|Ticket touts|Use licensed guides; hydrate',
'Oman|62|A-|Expensive|Moderate|Moderate|Desert driving|Heat|Use 4x4 for wadis; plan fuel',
'Qatar|63|A-|Expensive|Easy|Easy|Road fines|Heat|Use metro; respect local rules',
'Bahrain|64|A-|Moderate|Easy|Easy|Night driving|Heat|Use rideshares; hydrate',
'Israel|65|B|Expensive|Easy|Easy|Security checks|Scams|Follow guidance;

official routes only',
    'Georgia|66|B|Cheap|Moderate|Moderate|Mountain roads|Night theft|Hire vetted drivers; day travel',
    'Armenia|67|B|Cheap|Moderate|Moderate|Border zones|Rural roads|Use licensed drivers; carry cash',
    'Sri Lanka|68|B|Cheap|Moderate|Moderate|Beach touts|Train crowding|Reserve seats; day travel',
    'Nepal|69|B-|Cheap|Moderate|Moderate|Altitude|Night roads|Hire guides; monitor weather',
    'Bhutan|70|A-|Expensive|Moderate|Moderate|Mountain roads|Altitude|Book via authorized operators',
    'Uzbekistan|71|B|Cheap|Moderate|Moderate|Taxi overcharge|Pickpockets|Use Yandex/official cabs',
    'Kazakhstan|72|B|Moderate|Moderate|Moderate|Road checks|Night theft|Use city taxis; carry copies',
    'Kyrgyzstan|73|B-|Cheap|Moderate|Moderate|Mountain roads|Night buses|Use guides; day crossings',
    'Mauritius|74|A-|Expensive|Easy|Easy|Beach theft|Road left|Use hotel safes; drive left',
    'Seychelles|75|A-|Expensive|Moderate|Moderate|Beach theft|Currents|Beware rip currents; secure villas',
    'Fiji|76|B+|Moderate|Moderate|Moderate|Resort theft|Cyclones|Use safes; watch season',
    'Maldives|77|A-|Expensive|Moderate|Moderate|Resort theft|Currents|Follow island rules; guided snorkeling',
    'Rwanda|78|A-|Moderate|Moderate|Moderate|Road checks|Park rules|Book permits; use official guides',
    'Ghana|79|B|Moderate|Moderate|Moderate|Phone snatch|Market theft|Use hotel taxis; conceal phones',
    'Senegal|80|B|Moderate|Moderate|Moderate|Beach theft|Night roads|Use known areas; day trips',
    'Namibia|81|A-|Moderate|Moderate|Moderate|Desert driving|Wildlife|Fuel often; avoid night drives',
    'Botswana|82|A-|Expensive|Moderate|Moderate|Wildlife roads|Cash in villages|Guided safaris; cash small bills',
    'Zambia|83|B+|Moderate|Moderate|Moderate|Border touts|Night roads|Use official exchanges; day border runs',
    // Risk-only selection
    'Kenya|-|C+|Moderate|Moderate|Moderate|Mugging|Border terror|Use registered cabs; avoid isolated parks at night',
    'Tanzania|-|C+|Cheap|Moderate|Moderate|Snatch theft|Ferry theft|Use hotel taxis; keep phones hidden near roads',
    'Nigeria|-|D|Moderate|Moderate|Moderate|Kidnapping|Fraud|Use secure transfers; vary routes',
    'Ethiopia|-|D|Cheap|Moderate|Moderate|Civil unrest|Robbery|Avoid protests; shelter in secure hotels',
    'Egypt|-|C|Cheap|Moderate|Moderate|Harassment|Sinai terror|Dress modestly; licensed guides only',
    'Lebanon|-|D|Moderate|Moderate|Moderate|Unrest|Border kidnapping|Avoid protests; trusted drivers only',
    'Pakistan|-|D+|Cheap|Moderate|Moderate|Terror threats|Kidnapping|Avoid crowds; escorts where advised',
    'India|-|C+|Cheap|Moderate|Moderate|Scam hubs|Harassment|Prepaid taxis; keep copies of documents',

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    'Dominican Republic|-|C|Moderate|Moderate|Moderate|Drink spiking|Resort theft|Use room safes; hotel taxis',
    'Jamaica|-|C|Moderate|Moderate|Moderate|Robbery|Assault|Avoid night walks; stay in known zones',
    'Belize|-|C|Moderate|Moderate|Moderate|District robberies|Night roads|Use authorized tours; avoid isolated beaches',
    'Paraguay|-|C|Cheap|Moderate|Moderate|Phone theft|ATM fraud|Use ride-hail; bank ATMs only',
    'Tunisia (south)|-|C|Cheap|Moderate|Moderate|Desert risk|Border terror|Avoid remote drives without permits',
    'Mozambique|-|C|Cheap|Moderate|Moderate|Break-ins|Armed robbery|Avoid dusk travel; guarded parking',
    'Madagascar|-|C|Cheap|Moderate|Moderate|Rural robbery|Night walking|Join daytime tours; avoid isolated roads',
    'Bolivia|-|C|Cheap|Moderate|Moderate|Bus theft|Currency scams|Use official counters; no night buses',
    'Honduras|-|D|Cheap|Moderate|Moderate|Gang violence|Robbery|Avoid secluded areas; travel in groups',
    'Guatemala|-|D|Cheap|Moderate|Moderate|Bus robberies|Extortion|Tourist shuttles; small cash only',
    'El Salvador|-|D|Cheap|Moderate|Moderate|Gang threats|Extortion|Main routes only; phones concealed',
    'Colombia|-|D+|Moderate|Moderate|Moderate|Express kidnapping|Robbery|Ride-hail; avoid street ATMs',
    'Brazil|-|D+|Moderate|Moderate|Moderate|Armed robbery|Carjacking|Avoid empty beaches at dusk',
    'Peru|-|C+|Cheap|Moderate|Moderate|Street robbery|Roadblocks|Join reputable tours; avoid isolated viewpoints',
    'Ecuador|-|D|Cheap|Moderate|Moderate|Kidnapping|Extortion|Avoid border hotspots; trusted taxis',
    'Trinidad and Tobago|-|D|Moderate|Moderate|Moderate|Shootings|Robbery|Hotel taxis; limit night travel',
    'South Africa|-|D|Moderate|Moderate|Moderate|Carjacking|Armed robbery|Doors locked; daylight routes'
  ];

  // Micronations (type:"micro")
  const MICROS=[
    {name:'Principality of Sealand',type:'micro',pop:'~30–50',gdp:'Unknown',leader:'Prince Michael',founded:'1967',pitch:'Micronation on a WW2 sea fort off England. Not a UN state.',story:'Founded by pirate-radio pioneer Roy Bates to broadcast beyond UK law. Issues titles and passports; dramatic 1978 coup attempt repelled. Listed as MICRONATION for clarity.'},
    {name:'Republic of Molossia',type:'micro',pop:'~35',gdp:'Unknown',leader:'President Kevin Baugh',founded:'1977',pitch:'Comedy-spirited desert micronation in Nevada, USA.',story:'Famous for whimsical customs, a space program, and a declared war on East Germany until 2018. Tours book out months ahead. MICRONATION only.'},
    {name:'Liberland',type:'micro',pop:'~700k e-citizens',gdp:'Unknown',leader:'President Vít Jedlička',founded:'2015',pitch:'Claim on Danube river island between Croatia and Serbia.',story:'Founded on terra nullius concept; residents mainly online with libertarian ideals. Border access is limited. MICRONATION, not a UN state.'},
    {name:'Kingdom of North
```

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Sudan',type:'micro',pop:'<10',gdp:'Unknown',leader:'Jeremiah
Heaton',founded:'2014',pitch:'Bir Tawil claim between Egypt and
Sudan.',story:'Started as a father’s promise to make his daughter a princess. Purely
symbolic; no recognition. MICRONATION label applies.'},
    {name:'Grand Duchy of Flandrensis',type:'micro',pop:'~8k
citizens',gdp:'Unknown',leader:'Grand Duke Nikolaus',founded:'2008',pitch:'Claims
in Antarctica for climate advocacy.',story:'No land occupation; promotes
environmental protection and “no human presence in Antarctica”. Recognized as a
MICRONATION only.'},
    {name:'Duchy of Sealand New
Malta',type:'micro',pop:'Unknown',gdp:'Unknown',leader:'Various',founded:'—
',pitch:'Minor offshoot projects around sea-fort concept.',story:'Community
experiments; not territorial states. MICRONATION.'},
    {name:'Principality of Hutt River',type:'micro',pop:'Defunct (former)',gdp:'—
',leader:'Prince Graeme (former)',founded:'1970',pitch:'Former Australian farm
secession project.',story:'Closed in 2020; kept for cultural history. MICRONATION
(historic).'},
    {name:'Kingdom of Talossa',type:'micro',pop:'~2k',gdp:'Unknown',leader:'King
John',founded:'1979',pitch:'Fantasy kingdom created by a teenager in
Milwaukee.',story:'Rich culture with its own language. Online-first, MICRONATION
only.'},
    {name:'Ladonia',type:'micro',pop:'~22k online',gdp:'Unknown',leader:'Queen
Carolyn',founded:'1996',pitch:'Art-state in a Swedish nature reserve.',story:'Born
from legal battles over sculpture “Nimis”. Citizenship mostly virtual.
MICRONATION.'},
    {name:'Principality of
Seborga',type:'micro',pop:'~300',gdp:'Unknown',leader:'Prince Marcello
I',founded:'1990s revival',pitch:'Italian hill town with princely lore.',story:'Touristic
pageantry claims medieval independence. Cultural MICRONATION.'},
    {name:'Asgardia',type:'micro',pop:'~1M e-citizens',gdp:'Unknown',leader:'Igor
Ashurbeyli',founded:'2016',pitch:'Space-themed online nation.',story:'Launched a
micro-satellite; seeks space law debates. No territory; MICRONATION.'},
    {name:'Westarctica',type:'micro',pop:'~3k citizens',gdp:'Unknown',leader:'Grand
Duke Travis',founded:'2001',pitch:'Claims Marie Byrd Land, Antarctica.',story:'Focus
on conservation and charity; symbolic claim. MICRONATION.'},
    {name:'Wirtland',type:'micro',pop:'~3k',gdp:'Unknown',leader:'Chancellor
(var.)',founded:'2008',pitch:'Internet-based transnational micronation.',story:'Issued
“phaleras” and ID cards. Purely virtual; MICRONATION.'},
    {name:'Christiania
(Freetown)',type:'micro',pop:'~1k',gdp:'Unknown',leader:'Collective',founded:'1971',p
itch:'Autonomous neighborhood in Copenhagen.',story:'Self-governed commune
famous for art and green light district. Not a state; MICRONATION tag added.'},
    {name:'Akhzivland',type:'micro',pop:'<20',gdp:'Unknown',leader:'Eli Avivi (founder,
late)',founded:'1971',pitch:'Tiny cultural enclave in Israel.',story:'Run as a private
museum-village. Tourist curiosity; MICRONATION.'}
  ];

   // ==================== CONSTANTS ====================
  const ROT_DEFAULT=20000, ROT_HOVER=40000, USER_LOCK_MS=40000,
COLLAPSE_PCT=0.60, MIN_COLLAPSED=424;
  let rotDelay=ROT_DEFAULT;

  // ==================== DOM ====================
  const
```

```
box=document.getElementById('box'),q=document.getElementById('q'),dl=documen
t.getElementById('countries');
  const
riskBtn=document.getElementById('riskBtn'),aiBtn=document.getElementById('aiBtn
');
  const
elT=document.getElementById('title'),elP=document.getElementById('period');
  const
elN=document.getElementById('name'),elR=document.getElementById('rank'),elG=
document.getElementById('grade'),elD=document.getElementById('desc'),elM=doc
ument.getElementById('more'),sr=document.getElementById('sr'),view=document.g
etElementById('view');

  // ==================== LABELS ====================
  const LABELS={title:'44kb Offline AI click',moody:"Moody\'s 5yr
avg",placeholder:'Country… (ex. America or USA)',risk:'Risk',choose:'Choose a
country or press Risk.',sgrade:'Safety Grade',rank:'Tourism Rank
#',micro:'Micronation',notun:'not a UN state',ai:'AI (k-NN + RLS) suggestion'};
  elT.innerHTML=`<a href="diplomacy(1).html" style="color:#0b77d5;text-
decoration:underline">${LABELS.title}</a>`;
  q.setAttribute('placeholder',LABELS.placeholder);
  riskBtn.textContent=LABELS.risk;

  // ==================== HELPERS ====================
  const GEXP={"A+":"Exceptional safety across regions.","A":"Very safe, though not
absolute best.","A-":"Safe overall with minor caveats.","B+":"Generally safe for
visitors.","B":"Safe, some instability to watch.","B-":"Mostly safe, borderline in
parts.","C+":"Acceptable but uneven safety.","C":"Fine by day, caution at night.","C-
":"Daytime ok, avoid roaming at night.","D+":"Poor safety in notable
areas.","D":"Poor; metro zones only feel stable.","D-":"Poor; even metro areas feel
risky.","E+":"Very poor; avoid travel, escort advised.","E":"Very poor; escort advised,
avoid travel.","E-":"Extremely poor; do not visit.","F":"Worst level; absolute no-
go.","NA":"Information limited between 2020–2024; consult official guidance."};
  const riskRe=/^(D|E|F)/;
  const gradeOrder={"F":0,"E-":1,"E":2,"E+":3,"D-":4,"D":5,"D+":6,"C-
":7,"C":8,"C+":9,"B-":10,"B":11,"B+":12,"A-":13,"A":14,"A+":15,"NA":99};

  const
MOODYS={'Luxembourg':'Aaa','Germany':'Aaa','Switzerland':'Aaa','Norway':'Aaa','D
enmark':'Aaa','Sweden':'Aaa','Netherlands':'Aaa','Finland':'Aaa','Austria':'Aa1','United
States':'Aaa','Canada':'Aaa','Australia':'Aaa','New
Zealand':'Aaa','Singapore':'Aaa','United
Kingdom':'Aa3','France':'Aa2','Japan':'A1','Italy':'Baa3','Spain':'Baa1','Ireland':'A1','Po
rtugal':'Baa2','Mexico':'Baa2','Brazil':'Ba2','India':'Baa3','South
Africa':'Ba2','Turkey':'B3','United Arab Emirates':'Aa2','Saudi
Arabia':'A1','Qatar':'Aa2','Korea, Republic of (South Korea)':'Aa2','China':'A1'};
  function
moodysColor(r){if(!r||/^NR$/i.test(r)||/^None$/i.test(r))return'black';if(/^WR$/i.test(r))r
eturn'red';if(/^(Aaa|Aa|A|Baa)/.test(r))return'green';if(/^(Ba|B[1-
3]?$)/.test(r))return'black';if(/^(Caa|Ca|C)$/i.test(r))return'red';return'black'}
  function creditInfo(name){const
r=MOODYS[name]||MOODYS[(name||'').toLowerCase()]||'None';return{text:r,cls:mo
odysColor(r),raw:r}}
  function
```

```
gColor(g){if(/^A|^B/.test(g))return'green';if(/^C|NA$/.test(g))return'black';return'red'}

  const FOODS={'Japan':['sushi','ramen','okonomiyaki'],'United
States':['burger','BBQ','clam chowder'],'France':['croissant','crêpe','coq au
vin'],'Italy':['pizza','pasta','gelato'],'Spain':['paella','tapas','churros'],'Thailand':['pad
thai','som tam','tom yum'],'Korea, Republic of (South
Korea)':['bibimbap','bulgogi','kimchi stew'],'China':['dumplings','hot pot','Peking
duck'],'Germany':['bratwurst','pretzel','schnitzel'],'United Kingdom':['fish and
chips','pie and mash','full
English'],'Mexico':['tacos','mole','pozole'],'Turkey':['kebap','baklava','lahmacun'],'Mala
ysia':['nasi lemak','satay','laksa'],'Singapore':['chicken rice','laksa','chilli
crab'],'Portugal':['pastel de nata','bacalhau','francesinha'],'Canada':['poutine','butter
tart','Nanaimo bar'],'Australia':['meat pie','lamington','barramundi'],'New
Zealand':['lamb','hokey pokey','green-lipped mussels']};
  function foodsLine(name){const arr=FOODS[name]||['local street food','the national
dish','a signature dessert'];return 'Recommended foods: '+arr[0]+', '+arr[1]+',
'+arr[2]+'.'}

  // LocalStorage helpers
  const LS_KEY='wtta.last';
  function save(c){try{localStorage.setItem(LS_KEY,c)}catch(e){}}
  function load(){try{return localStorage.getItem(LS_KEY)||''}catch(e){return''}}

  // String helpers
  function asString(x){if(typeof x==='string')return x; if(x&&typeof
x.name==='string')return x.name; return ''}
  function trim(s){return (typeof s==='string'?s:'').replace(/\s+/g,' ').trim()}
  function cleanInput(v){return
asString(v).replace(/\s*\((risk|safe\s*#\d+|micronation|info\-limited)\)\s*$/i,'').trim()}
  function fold(s){try{return s.normalize('NFD').replace(/[\u0300-
\u036f]/g,'')}catch(_){return s}}
  function grams(s){s=fold(asString(s).toLowerCase());s=(' '+s+' ').replace(/[^a-
z\s]/g,'');const g=new Set();for(let i=0;i<s.length-2;i++)g.add(s.slice(i,i+3));return g}
  function jacc(a,b){const A=grams(a),B=grams(b);let
inter=0;A.forEach(x=>{if(B.has(x))inter++});return inter/Math.max(1,A.size+B.size-
inter)}
  function bestMatch(name){
    const ALIAS={'usa':'united states','us':'united states','u.s.':'united
states','america':'united states','united states of america':'united states','uk':'united
kingdom','britain':'united kingdom','england':'united kingdom','kr':'korea, republic of
(south korea)','korea':'korea, republic of (south korea)','south korea':'korea, republic
of (south korea)','republic of korea':'korea, republic of (south
korea)','jp':'japan','jpn':'japan','nippon':'japan','uae':'united arab
emirates','emirates':'united arab emirates','ksa':'saudi arabia','cote d\'ivoire':'côte
d’ivoire','cote d’ivoire':'côte d’ivoire','vietnam':'viet nam','russia':'russian federation'};
    const norm=(s)=>{s=fold(asString(s).toLowerCase().trim());return ALIAS[s]||s};
    const s=norm(name); if(!s) return ''; if(DB[s]) return s; let best='',sc=0; for(const k
of Object.keys(DB)){const v=jacc(s,k); if(v>sc){sc=v;best=k}} return sc>.18?best:'';
  }

  // ==================== DATA BUILD ====================
  function mkObj(line){const p=(line||'').split('|');const name=p[0]||'';const
rRaw=p[1];const rank=(rRaw&&rRaw!=='-
'&&isFinite(+rRaw))?Number(rRaw):null;const grade=p[2]||'C';const
```

```
cost=p[3]||'Moderate';const eng=p[4]||'Moderate';const fx=p[5]||'Moderate';const
r1=p[6]||'Theft';const r2=p[7]||'Scams';const tip=p[8]||'Use official
options';return{key:asString(name).toLowerCase(),name:asString(name),rank,grade
,cost,eng,fx,r1,r2,tip}};

  const DB={}, ITEMS=(Array.isArray(TOK)?TOK:[]).map(mkObj); for(const o of
ITEMS){DB[o.key]=o}

(Array.isArray(MICROS)?MICROS:[]).forEach(m=>{if(m&&m.name){DB[m.name.toL
owerCase()]=m}});

  const UN_STR='Afghanistan|Albania|Algeria|Andorra|Angola|Antigua and
Barbuda|Argentina|Armenia|Australia|Austria|Azerbaijan|Bahamas|Bahrain|Banglad
esh|Barbados|Belarus|Belgium|Belize|Benin|Bhutan|Bolivia|Bosnia and
Herzegovina|Botswana|Brazil|Brunei|Bulgaria|Burkina Faso|Burundi|Cabo
Verde|Cambodia|Cameroon|Canada|Central African
Republic|Chad|Chile|China|Colombia|Comoros|Congo|Costa Rica|Côte
d'Ivoire|Croatia|Cuba|Cyprus|Czechia|Democratic Republic of the
Congo|Denmark|Djibouti|Dominica|Dominican Republic|Ecuador|Egypt|El
Salvador|Equatorial
Guinea|Eritrea|Estonia|Eswatini|Ethiopia|Fiji|Finland|France|Gabon|Gambia|Georgia
|Germany|Ghana|Greece|Grenada|Guatemala|Guinea|Guinea-
Bissau|Guyana|Haiti|Honduras|Hungary|Iceland|India|Indonesia|Iran|Iraq|Ireland|Isr
ael|Italy|Jamaica|Japan|Jordan|Kazakhstan|Kenya|Kiribati|Korea, Republic of
(South Korea)|Kuwait|Kyrgyzstan|Lao
PDR|Latvia|Lebanon|Lesotho|Liberia|Libya|Liechtenstein|Lithuania|Luxembourg|Ma
dagascar|Malawi|Malaysia|Maldives|Mali|Malta|Marshall
Islands|Mauritania|Mauritius|Mexico|Micronesia|Moldova|Monaco|Mongolia|Monten
egro|Morocco|Mozambique|Myanmar|Namibia|Nauru|Nepal|Netherlands|New
Zealand|Nicaragua|Niger|Nigeria|North
Macedonia|Norway|Oman|Pakistan|Palau|Panama|Papua New
Guinea|Paraguay|Peru|Philippines|Poland|Portugal|Qatar|Romania|Russian
Federation|Rwanda|Saint Kitts and Nevis|Saint Lucia|Saint Vincent and the
Grenadines|Samoa|San Marino|Sao Tome and Principe|Saudi
Arabia|Senegal|Serbia|Seychelles|Sierra
Leone|Singapore|Slovakia|Slovenia|Solomon Islands|Somalia|South Africa|South
Sudan|Spain|Sri Lanka|Sudan|Suriname|Sweden|Switzerland|Syrian Arab
Republic|Tajikistan|Tanzania|Thailand|Timor-Leste|Togo|Tonga|Trinidad and
Tobago|Tunisia|Turkey|Turkmenistan|Tuvalu|Uganda|Ukraine|United Arab
Emirates|United Kingdom|United
States|Uruguay|Uzbekistan|Vanuatu|Venezuela|Viet
Nam|Yemen|Zambia|Zimbabwe';
  const UN=UN_STR.split('|');
  UN.forEach(n=>{const k=n.toLowerCase();
if(!DB[k]){DB[k]={name:n,key:k,rank:null,grade:'NA',cost:'Unknown',eng:'Unknown',f
x:'Unknown',r1:'—',r2:'—',tip:'Information limited; check official
advisories.',type:'country'}}});

  const ITEMS2=Object.values(DB);
  const GOOD=ITEMS2.filter(o=>o.rank!=null&&!o.type).sort((a,b)=>a.rank-b.rank);
  const RISK_ALL=ITEMS2.filter(o=>!o.type&&riskRe.test(o.grade||''));
  const RISK_SORTED=RISK_ALL.slice().sort((a,b)=> (gradeOrder[a.grade]??99)-
(gradeOrder[b.grade]??99)||a.name.localeCompare(b.name));
  const
```

```
MICRONAMES=(Array.isArray(MICROS)?MICROS:[]).map(m=>m.name).filter(Boolean).sort();

  // Datalist
  const names=UN.concat(MICRONAMES).sort((a,b)=>a.localeCompare(b));
  names.forEach(n=>{const o=DB[n.toLowerCase()];let label=o.name;if(o.type==='micro')label+=' (MICRONATION)';else if(riskRe.test(o.grade||''))label+=' (RISK)';else if(o.rank!=null)label+=` (SAFE #${o.rank})`;else label+=' (INFO-LIMITED)';const op=document.createElement('option');op.value=label;dl.appendChild(op)});

  // ==================== SIZING ====================
  let roPending=false,lastFull=0,lastCol=0;
  function recalc(){try{const prev=box.style.maxHeight;box.style.maxHeight='none';const full=box.scrollHeight;const collapsed=Math.max(MIN_COLLAPSED,Math.round(full*COLLAPSE_PCT));box.style.maxHeight=prev;if(full===lastFull&&collapsed===lastCol)return;lastFull=full;lastCol=collapsed;box.style.setProperty('--expanded-h',full+'px');box.style.setProperty('--collapsed-h',collapsed+'px')}catch(_){}}
  function qRec(){if(roPending)return;roPending=true;requestAnimationFrame(()=>{requestAnimationFrame(()=>{roPending=false;recalc()})})}
  if('ResizeObserver' in window){const ro=new ResizeObserver(()=>qRec());ro.observe(view)}
  window.addEventListener('resize',qRec);

  // ==================== ROTATION ====================
  let mode='core',rotId=null,visible=true,userLock=null,goodIdx=0,phase='good';
  function step(){if(phase==='good'&&GOOD.length){const o=GOOD[goodIdx%GOOD.length];goodIdx++;show(o,false);phase='risk'}else if(RISK_ALL.length){const o=RISK_ALL[Math.floor(Math.random()*RISK_ALL.length)];show(o,false);phase='good'}else{show(ITEMS2[Math.floor(Math.random()*ITEMS2.length)],false)}}
  function startAuto(){if(rotId||!visible)return;rotId=setInterval(()=>{if(!userLock&&visible){step()}},rotDelay)}
  function stopAuto(){if(rotId){clearInterval(rotId);rotId=null}}
  function lock(){if(userLock)clearTimeout(userLock);stopAuto();userLock=setTimeout(()=>{userLock=null;startAuto()},USER_LOCK_MS)}

  // Hover

box.addEventListener('pointerenter',()=>{mode='deep';rotDelay=ROT_HOVER;stopAuto();startAuto();if(curr)show(curr,false)});

box.addEventListener('pointerleave',()=>{mode='core';rotDelay=ROT_DEFAULT;stopAuto();startAuto();if(curr)show(curr,false)});

  // Visibility
  (function(){try{if('IntersectionObserver'in window&&box){const io=new IntersectionObserver(es=>{es.forEach(e=>{visible=e.isIntersecting;if(visible)startAuto();else
```

```
stopAuto()})});io.observe(box)}else{visible=true;startAuto()}}catch(_){visible=true;sta
rtAuto()}})();

  // ==================== AI MINI ENGINE ====================
  let aiMode=false;
  const COST_MAP={cheap:0.2,moderate:0.5,expensive:0.8};
  const ENG_MAP={difficult:0.2,moderate:0.5,easy:0.8};
  const FX_MAP={easy:0.8,moderate:0.5,difficult:0.2};
  const GRADE_SCORE={"A+":1.00,"A":0.97,"A-":0.94,"B+":0.86,"B":0.83,"B-
":0.80,"C+":0.68,"C":0.62,"C-":0.56,"D+":0.43,"D":0.37,"D-
":0.31,"E+":0.20,"E":0.16,"E-":0.12,"F":0.05};
  const SCORE_TO_GRADE=[[0.985,'A+'],[0.94,'A'],[0.90,'A-
'],[0.86,'B+'],[0.83,'B'],[0.8,'B-'],[0.68,'C+'],[0.62,'C'],[0.56,'C-
'],[0.43,'D+'],[0.37,'D'],[0.31,'D-'],[0.20,'E+'],[0.16,'E'],[0.12,'E-'],[0,'F']];
  function scoreToGrade(s){for(const[t,g]of SCORE_TO_GRADE){if(s>=t)return
g}return'F'}
  function ratingToScore(r){if(!r||r==='None')return 0.5;const
map={Aaa:1.0,Aa1:0.95,Aa2:0.93,Aa3:0.90,A1:0.85,A2:0.82,A3:0.80,Baa1:0.75,Ba
a2:0.72,Baa3:0.70,Ba1:0.60,Ba2:0.57,Ba3:0.55,B1:0.50,B2:0.47,B3:0.45,Caa1:0.38
,Caa2:0.35,Caa3:0.33,Ca:0.30,C:0.25};return map[r]??0.5}
  const
RISK_KEYS=['kidnapping','robbery','theft','carjacking','fraud','extortion','harassment',
'gangs','terror','unrest','roads','weather','spiking'];
  function canonRisk(s){s=(s||'').toLowerCase();
    if(/kidnap/.test(s))return'kidnapping';
    if(/carjack/.test(s))return'carjacking';
    if(/robbery|mugging|armed/.test(s))return'robbery';
    if(/pickpocket|snatch|theft|break\-ins|market theft|station
theft|trailhead/.test(s))return'theft';
    if(/scam|fraud|skimmer|counterfeit|ticket|currency/.test(s))return'fraud';
    if(/extortion/.test(s))return'extortion';
    if(/harass/.test(s))return'harassment';
    if(/gang|shooting/.test(s))return'gangs';
    if(/terror/.test(s))return'terror';
    if(/unrest|protest|security checks/.test(s))return'unrest';
    if(/road|night roads|rural driving|mountain roads|roadblocks/.test(s))return'roads';
    if(/weather|heat|cold|ice|cyclone|typhoon|currents|desert/.test(s))return'weather';
    if(/spiking/.test(s))return'spiking';
    return'';
  }
  const VEC_CACHE=new Map();
  function vecFor(o,{excludeGrade=false}={}){const
key=((o&&(o.key||asString(o.name).toLowerCase()))||'')+'|'+excludeGrade;
if(VEC_CACHE.has(key))return VEC_CACHE.get(key).slice(); const
c=String(o.cost||'Unknown').toLowerCase(); const
e=String(o.eng||'Unknown').toLowerCase(); const
f=String(o.fx||'Unknown').toLowerCase(); const
cost=(COST_MAP[c]??0.5)*0.7,eng=(ENG_MAP[e]??0.5)*0.7,fx=(FX_MAP[f]??0.5)
*0.7; const rating=creditInfo(o.name).raw; const credit=ratingToScore(rating)*0.8;
const r1=canonRisk(o.r1),r2=canonRisk(o.r2); const
risks=RISK_KEYS.map(k=>((r1===k||r2===k)?1:0)*1.6); const grade=0; const
v=[cost,eng,fx,credit].concat(risks).concat([grade]); VEC_CACHE.set(key,v.slice());
return v;}
  function dot(a,b){let s=0;for(let i=0;i<a.length;i++)s+=a[i]*b[i];return s}
```

```
  function norm(a){return Math.sqrt(dot(a,a))||1}
  function cos(a,b){return dot(a,b)/(norm(a)*norm(b))}
  const TRAIN=ITEMS2.filter(x=>!x.type&&x.grade&&x.grade!=='NA');
  function predictGradeKNN(target,k=5){const
vT=vecFor(target,{excludeGrade:true});const sims=[];for(const cand of
TRAIN){if(cand.name===target.name)continue;const
vC=vecFor(cand,{excludeGrade:true});const
s=cos(vT,vC);if(Number.isFinite(s))sims.push([s,cand])}sims.sort((a,b)=>b[0]-
a[0]);const top=sims.slice(0,k);let wsum=0,ysum=0;for(const[s,c]of top){const
y=GRADE_SCORE[c.grade]??0.5;const
w=Math.max(0,s);ysum+=w*y;wsum+=w}const
score=wsum>0?(ysum/wsum):0.5;const pred=scoreToGrade(score);const
neigh=top.slice(0,3).map(([s,c])=>`${c.name} (${c.grade}, ${s.toFixed(2)})`).join(',
');const avgSim=top.reduce((a,[s])=>a+s,0)/Math.max(1,top.length);const uniq=new
Set(top.map(([,c])=>c.grade)).size;const
pm=(avgSim<0.82||uniq>=3)?'±1':'±0';return{pred,score:score.toFixed(2),neighbors:
neigh,pm,avgSim}};

  // Lightweight online learner (RLS)
  function phi(o){const v=vecFor(o,{excludeGrade:true}).slice(0,-1);return v}
  function zeros(n){const a=new Array(n);for(let i=0;i<n;i++)a[i]=0;return a}
  function eye(n,scale=1){const a=new Array(n*n);for(let i=0;i<n*n;i++)a[i]=0;for(let
i=0;i<n;i++)a[i*n+i]=scale;return a}
  function mulMatVec(M,x){const n=x.length;const y=new Array(n);for(let
i=0;i<n;i++){let s=0;for(let j=0;j<n;j++)s+=M[i*n+j]*x[j];y[i]=s}return y}
  function addInPlace(A,B,alpha=1){for(let i=0;i<A.length;i++)A[i]+=alpha*B[i]}
  function outer(a,b){const n=a.length,m=b.length;const out=new Array(n*m);for(let
i=0;i<n;i++){const ai=a[i];for(let j=0;j<m;j++){out[i*m+j]=ai*b[j]}}return out}
  function clamp(x,a,b){return Math.max(a,Math.min(b,x))}
  const L2=(function(){const d=phi(ITEMS2[0]).length;let w=zeros(d);let
P=eye(d,10);const ff=0.98;function predictScore(o){const x=phi(o);const
Px=mulMatVec(P,x);const denom=ff+dot(x,Px);const yhat=dot(w,x);const
conf=clamp(1-1/(1+denom),0.2,0.98);return{yhat,conf,x,Px,denom}}function
rlsUpdate(x,y){const Px=mulMatVec(P,x);const denom=ff+dot(x,Px);const
kVec=Px.map(v=>v/denom);const yhat=dot(w,x);const err=y-yhat;for(let
i=0;i<w.length;i++)w[i]+=kVec[i]*err;const
KxTP=outer(kVec,Px);addInPlace(P,KxTP,-1);for(let
i=0;i<P.length;i++)P[i]/=ff}function topDrivers(x){const
parts=x.map((xi,i)=>[Math.abs(w[i]*xi),i]).sort((a,b)=>b[0]-a[0]).slice(0,4);return
parts.map(([_,i])=>`f${i+1}:${(w[i]*x[i]>=0?'+':'')}${(w[i]*x[i]).toFixed(2)}`).join(',
')}function blend(o){const k=predictGradeKNN(o,5);const
kScore=parseFloat(k.score);const {yhat,conf,x}=predictScore(o);const
wL=clamp(conf*0.9,0.10,0.85);const wK=clamp(1-wL+(k.avgSim-
0.75)*0.4,0.15,0.9);const s=clamp((wK*kScore+wL*yhat)/(wK+wL),0,1);const
g=scoreToGrade(s);return{s,g,parts:{yhat:yhat.toFixed(2),conf:conf.toFixed(2),wK:w
K.toFixed(2),wL:wL.toFixed(2),x},knn:k}}function observe(o){const
g=o.grade;if(!g||g==='NA')return;const y=GRADE_SCORE[g];if(typeof
y!=='number')return;const
x=phi(o);rlsUpdate(x,y)}return{predictScore,blend,observe,topDrivers}})();

  function renderAiNote(o){try{const b=L2.blend(o);const
d=L2.topDrivers(b.parts&&b.parts.x?b.parts.x:phi(o));const k=b.knn;const
predK=k.pred;const predL=scoreToGrade(parseFloat(b.parts.yhat));return `<div
class="ai-note ai-grid"><div><strong>${LABELS.ai}:</strong> <span class="badge
```

```
${gColor(b.g)}">${b.g}</span> <span class="brkt">【 blend=${b.s.toFixed(2)};
wK=${b.parts.wK}; wL=${b.parts.wL} 】</span></div><div class="muted">k-NN:
<span class="chip">${predK||'—'}</span> ${k.neighbors?`via
<em>${k.neighbors}</em>`:''}</div><div class="muted">RLS: <span
class="chip">${predL}</span> <span class="brkt">【 y^=${b.parts.yhat}, conf
${b.parts.conf} 】</span></div><div class="muted">Top drivers:
${d}</div><small>On-device learning; no network calls. Predictions are heuristic
and not legal travel advice.</small></div>`}catch(_){return''}}

  // ==================== RENDER ====================
  let curr=null;
  function displayName(o){if(o.type==='micro')return `${o.name} (MICRONATION)`;
if(riskRe.test(o.grade||''))return `${o.name} (RISK)`; if(o.rank!=null)return `${o.name}
(SAFE #${o.rank})`; return `${o.name} (INFO-LIMITED)`}
  function updatePeriod(name){const c=creditInfo(name);elP.innerHTML=`A world-
class, ultra-lightweight on-device k-NN AI demo<span class="brkt">【 <span
class="badge ${c.cls}">${LABELS.moody}: ${c.text}</span> 】</span>`}

  // 🔧 겹침 버그 방지 핵심: 한 번의 렌더마다 #view 하위 내용을 확실히 교체
  function clearMore(){while(elM.firstChild)elM.removeChild(elM.firstChild)}

  function show(o,user){
    if(!o||typeof o!=='object')return; curr=o; const risky=riskRe.test(o.grade||'');
    // reset visible fields (강제 재페인트용)
    elN.textContent=''; elR.textContent=''; elG.textContent=''; elD.textContent='';
clearMore();

    elN.textContent=displayName(o);

elR.innerHTML=(o.type==='micro')?`(${LABELS.micro})`:(o.rank?(`${LABELS.rank}`
+o.rank):'(Unranked)');

    if(o.type==='micro'){
      elG.innerHTML='<strong>'+LABELS.micro+'</strong> <span class="brkt">
【 '+LABELS.notun+' 】</span>';
      elD.textContent=trim(o.pitch||'');
      elM.innerHTML='<div>'+(trim(o.story||''))+'</div>';
    }else{
      const exp=GEXP[o.grade||'NA']||GEXP.NA;
      elG.innerHTML='<strong>'+LABELS.sgrade+' <span class="badge
'+gColor(o.grade)+'">'+(o.grade||'NA')+'</span></strong> <span class="brkt">
【 '+exp+' 】</span>';
      elG.classList.remove('green','black','red');
elG.classList.add(gColor(o.grade||'NA'));
      elD.textContent=trim(['Money '+(o.cost||'Unknown')+'.',' English
'+(o.eng||'Unknown')+'.',' Exchange '+(o.fx||'Unknown')+'.',' Risks '+(o.r1||'—
').toLowerCase()+', '+(o.r2||'—').toLowerCase()+'.',' Tip '+(o.tip||'Use official
options')+'.'].join(''));
      if(mode==='deep'){elM.innerHTML='<div>'+['Money '+(o.cost||'Unknown')+'.','
English '+(o.eng||'Unknown')+'.',' Exchange '+(o.fx||'Unknown')+'.',' Issues:
'+(o.r1||'—').toLowerCase()+', '+(o.r2||'—').toLowerCase()+'.',' Tips: use official rides,
keep phones pocketed curbside, and confirm prices before rides.','
'+foodsLine(o.name)].join(' ')+'</div>'} else {clearMore()}
```

```
  }

  if(aiMode&&!o.type){ const wrap=document.createElement('div');
wrap.innerHTML=renderAiNote(o); elM.appendChild(wrap.firstElementChild)}

  updatePeriod(o.name);
  qRec();

  if(user){
    save(o.name); lock(); setQuery(o.name);
    if(o.rank!=null){const idx=GOOD.findIndex(x=>x.key===o.key); if(idx>-
1){goodIdx=idx+1; phase='risk'}} else if(risky){phase='good'}
    if(o.grade&&o.grade!=='NA'){L2.observe(o)}
  }

  sr.textContent=o.name+' loaded.';
 }

 function render(input){const
txt=cleanInput(String(input||'').replace(/\s*\([^)]*\)\s*$/,'').trim());
if(!txt){elN.textContent='—';elR.textContent='—';elG.textContent='—
';elD.textContent=LABELS.choose;clearMore();qRec();return} const
key=bestMatch(txt)||txt.toLowerCase(); const hit=DB[key]; if(hit)show(hit,true)}

 // ==================== URL STATE ====================
 function getQuery(){try{const u=new URL(location.href);return
u.searchParams.get('country')||''}catch(_){return''}}
 function setQuery(c){try{const u=new
URL(location.href);if(c){u.searchParams.set('country',c)}else{u.searchParams.delete
('country')}history.replaceState(null,'',u)}catch(_){}}

 // ==================== EVENTS ====================
 riskBtn.addEventListener('click',(()=>{let i=0;return()=>{lock();const
arr=RISK_SORTED.length?RISK_SORTED:ITEMS2;const
o=arr[i%arr.length];i++;show(o,true)}})());
 q.addEventListener('focus',()=>stopAuto());
 q.addEventListener('blur',()=>startAuto());
 q.addEventListener('mouseenter',()=>{q.value='';q.style.color=''});
 q.addEventListener('pointerdown',()=>{q.value='';q.style.color=''});
 q.addEventListener('change',function(){const v=cleanInput(this.value);const
key=bestMatch(v)||v.toLowerCase();if(DB[key])show(DB[key],true)});
 let live=null; q.addEventListener('input',function(){clearTimeout(live);const
v=cleanInput(this.value);const k=bestMatch(v)||v.toLowerCase();const
g=(DB[k]||{}).grade||'';this.style.color=/^d|^e|^f/i.test(g)?'#b01919':'';live=setTimeout((
)=>render(v),250)});


aiBtn.addEventListener('click',()=>{lock();aiMode=!aiMode;aiBtn.textContent=aiMod
e?'AI: ON':'AI:
OFF';aiBtn.style.background=aiMode?'#d9f2ff':'#e6f4ff';aiBtn.style.borderColor=aiM
ode?'#5bb8ee':'#9ad1f3'; if(curr)show(curr,false); sr.textContent='AI mode
'+(aiMode?'on':'off')});

 // ==================== TESTS (light) ====================
```

```
  (function tests(){try{console.group('[Ticker tests]');const
unCount=UN.length;console.assert(unCount>=193,'UN coverage
≥193');console.assert(!!DB['united states'],'United States
present');console.assert(riskRe.test('D+')&&riskRe.test('E')&&riskRe.test('F'),'riskRe
covers D/E/F');console.assert(bestMatch('usa')==='united states','alias usa→united
states');console.assert(bestMatch('jp')==='japan','alias
jp→japan');console.assert(bestMatch('kr')==='korea, republic of (south korea)','alias
kr→south korea');recalc();const
colH=parseInt(getComputedStyle(box).getPropertyValue('--collapsed-
h'))||MIN_COLLAPSED;console.assert(colH>=MIN_COLLAPSED,'collapsed ≥
baseline');updatePeriod('Luxembourg');console.assert(/
【/.test(elP.innerHTML)&&elP.innerHTML.includes(String(LABELS.moody||'')),'perio
d shows Moody label');console.groupEnd()}catch(err){console.error('[Ticker tests]
failed',err)}})();

  // ==================== INIT ====================
  (function init(){const seedName=cleanInput(getQuery()||load()||'Japan');const
seed=DB[(seedName||'').toLowerCase()]||DB['japan'];show(seed,false);recalc();start
Auto()})();
})();
</script>

<!-- ADVISORY PATCH: INFO-LIMITED 라벨 재표기 (append-only) -->
<script>
(function(){
  const dl=document.getElementById('countries');
  const input=document.getElementById('q');
  const nameEl=document.getElementById('name');
  const moreEl=document.getElementById('more');

  const ADVISORY=new Set(['Afghanistan','Syrian Arab
Republic','Iraq','Iran','Yemen','Sudan','South
Sudan','Somalia','Libya','Mali','Niger','Burkina Faso','Central African
Republic','Chad','Haiti','Myanmar','Democratic Republic of the
Congo','Eritrea','Ukraine','Russian Federation']);
  const STABLE=new Set(['Kuwait','Brunei','Liechtenstein','Uruguay','Costa
Rica','Cabo Verde','Kiribati','Nauru','Tuvalu','Samoa','Tonga','Micronesia','Marshall
Islands','Palau','Vanuatu']);

  function baseName(s){return String(s||'').replace(/\s*\(.*?\)\s*$/,'').trim()}
  function classify(n){if(ADVISORY.has(n))return'Travel
Advisory';if(STABLE.has(n))return'Travel Stable (estimated)';return'Travel Caution'}
  function relabelOption(op){const b=baseName(op.value);if(/\(INFO\-
LIMITED\)/.test(op.value)){op.label=b+' ('+classify(b)+')'}}
  function
relabelAllOptions(){if(!dl)return;Array.from(dl.options).forEach(relabelOption)}
  function
ensureNaAdvice(){if(!moreEl||moreEl.dataset.naAdviceAdded==='1')return;const
note=document.createElement('div');note.style.marginTop='4px';note.style.fontSize
='.72rem';note.style.color='#0b1221';note.innerHTML='<strong>Note:</strong>
Status is provisional. Please verify with an official travel advisory (e.g., U.S. State
Dept, UK FCDO, Australia Smartraveller, Canada Travel Advice). Also keep
valuables secure, avoid isolated areas at night, and use licensed
transport.';moreEl.appendChild(note);moreEl.dataset.naAdviceAdded='1'}
```

```
  function relabelHeadline(){const
t=nameEl&&nameEl.textContent||'';if(!t)return;if(/\(INFO\-LIMITED\)/.test(t)){const
b=baseName(t);nameEl.textContent=b+'
('+classify(b)+')';ensureNaAdvice()}else{if(moreEl){delete
moreEl.dataset.naAdviceAdded}}}
  relabelAllOptions();

if(input){input.addEventListener('focus',relabelAllOptions);input.addEventListener('in
put',relabelAllOptions)}
  const mo=new MutationObserver(relabelHeadline);
if(nameEl){mo.observe(nameEl,{childList:true,subtree:true,characterData:true})}
})();
</script>
<!-- ADVISORY PATCH END -->


<!--

"Beta-Bernoulli posterior probabilistic decision AI" is a Bayesian model
that updates its estimate of malaria risk as more binary observations
("Detected" vs. "Not detected") are collected. Decisions are then made
according to these updated probabilities in an online-learning bandit
framework (Thompson Sampling).

1. Problem framing:
Each country is treated as a Bernoulli process: repeated trials with outcomes
"Detected" or "Not detected". The unknown malaria risk is θ. Before any data,
θ is assumed to follow a Beta(α, β) distribution. Beta is the conjugate prior
for Bernoulli, so when observations arrive, the posterior remains Beta-shaped
and updates cleanly.

2. Learning and updating:
Initially, α=1 and β=1 are set for a neutral prior. If we observe s detections
and f non-detections, the posterior is Beta(α+s, β+f). The posterior mean
(expected risk) is (1+s) / (2+s+f). This gives an immediate percentage risk.
With Thompson Sampling, at each decision step we draw θ ~ Beta(α+s, β+f),
and if θ exceeds a threshold, we choose an action such as showing "Caution".
This balances exploration and exploitation naturally.

3. Context and weighting:
Instead of using s and f alone, contextual features like mosquito count can
adjust the update. For example, if mosquito count is 10, a capped boost of 0.5
is added to s (so s += 1.5). This reflects observation strength without runaway
effects. Time decay is also applied: older records are down-weighted with a
half-life schedule, ensuring responsiveness to recent data.

4. Contrast with k-NN and RLS:
- k-NN: finds similar countries and bases predictions on neighbors
- RLS: continuously adapts regression weights to fit numerical signals
- Beta-Bernoulli: models uncertainty directly. With few samples, the posterior
  is wide → more exploration. With more samples, the posterior sharpens → more
  exploitation. This automatic shift is what makes it a true "decision-making AI".

5. Demonstration impact:
```

Even a handful of inputs instantly change the posterior risk and sample count. Once thresholds are passed, a caution badge appears or disappears. This shows online learning, adaptation, and decision updates all in real time—entirely offline, using only HTML/JS, with statistics stored locally. Viewers clearly see "an offline AI that learns and changes its decisions."

In summary, this is a probabilistic decision-making online learning AI, implementing Thompson Sampling with a Beta-Bernoulli posterior. Each observation updates the success/failure counts; actions are chosen by posterior sampling or by using the posterior mean to update UI risk values.

-->

```
<!-- 신규 추가 스니펫 -->
<script>
(function(){
  'use strict';

  // ==================== 신규: 상단 배치 전용 스타일 주입 ====================
  (function injectStyle(){
    if(document.getElementById('mm-top-style')) return;
    const css=`
#name .mosq-btn{display:none!important}
#mm-top-btn{position:fixed;left:14px;top:110px;z-index:10003;font-size:.82rem;font-weight:800;border-radius:999px;padding:4px 10px;border:1px solid rgba(0,0,0,.12);background:#ffffff;color:#0b1221;box-shadow:0 4px 10px rgba(2,6,23,.12);cursor:pointer}
#mm-top-btn .label{margin-left:4px}
#mm-top-btn .mosq-tag{display:none;margin-left:6px;padding:0 6px;border:1px solid #ffc9c9;background:#ffe9e9;color:#7a2a2a;border-radius:999px;font-weight:900;font-size:.62rem}
#mm-top-btn.warn .mosq-tag{display:inline-block;animation:pulse .3s ease-out 1}
@keyframes pulse{0%{transform:scale(.9)}100%{transform:scale(1)}}
#mm-pop-fixed{position:fixed;z-index:10004;max-width:360px;background:#fff;border:1px solid rgba(0,0,0,.12);border-radius:12px;box-shadow:0 12px 28px rgba(2,6,23,.16);padding:10px;color:#0b1221;display:none}
#mm-pop-fixed h3{margin:0 0 6px 0;font-size:.9rem}
#mm-pop-fixed label{display:block;font-size:.8rem;margin-top:6px}
#mm-pop-fixed input[type="number"]{width:100%;padding:4px 6px;border:1px solid rgba(0,0,0,.16);border-radius:8px}
#mm-pop-fixed .row{display:flex;gap:8px;margin-top:8px}
#mm-pop-fixed .row button{font-size:.75rem;padding:4px 8px;border-radius:8px;border:1px solid rgba(0,0,0,.16);cursor:pointer}
#mm-save{background:#e6f4ff;border-color:#9ad1f3}
#mm-close{background:#ffecec;border-color:#ffc9c9}
#mmhelp{font-size:.72rem;opacity:.8;margin-top:6px}
    `.trim();
    const st=document.createElement('style');
    st.id='mm-top-style';
```

```
    st.textContent=css;
    (document.head||document.documentElement).appendChild(st);
  })();

  // ==================== 신규: 안전 저장소 폴백 ====================
  // 필요 시 sessionStorage로 바꾸면 창을 완전히 닫을 때까지로 수명이 제한됩니다.
  const store=(function(){
    try{
      const k='__mmtest__'; localStorage.setItem(k,'1'); localStorage.removeItem(k);
      return localStorage; // 여기를 sessionStorage로 바꾸면 세션 보존으로
동작합니다.
    }catch(_){
      const m={}; return
{getItem:k=>m[k]||null,setItem:(k,v)=>m[k]=String(v),removeItem:k=>delete m[k]};
    }
  })();

  // ==================== 신규: 하이퍼파라미터 ====================
  const KEY='malaria.mm.v1';
  const MIN_SAMPLES=3;
  const CAUTION_THRESHOLD=0.65;
  const HALFLIFE_DAYS=180;

  // ==================== 신규: 유틸 ====================
  const rail=()=>document.getElementById('infoRail');
  const nameEl=()=>document.getElementById('name');
  const base=s=>String(s||'').replace(/\s*\(.*?\)\s*$/,'').trim();
  const now=()=>Date.now();
  const load=()=>{try{return JSON.parse(store.getItem(KEY)||'{}')}catch(_){return{}}};
  const save=o=>{try{store.setItem(KEY,JSON.stringify(o))}catch(_){}};

  function decay(rec){
    if(!rec||!rec.t) return {s:0,f:0,t:now()};
    const days=(now()-rec.t)/(1000*60*60*24);
    const f=Math.pow(0.5,Math.max(0,days)/HALFLIFE_DAYS);
    return {s:(rec.s||0)*f, f:(rec.f||0)*f, t:now()};
  }

  function posterior(country){
    const d=load();
    const r=decay(d[country]||{s:0,f:0,t:now()});
    const a=1+(r.s||0), b=1+(r.f||0);
    return {p:a/(a+b), a, b};
  }

  function record(country,{detected,count}){
    const d=load();
    const prev=decay(d[country]||{s:0,f:0,t:now()}); // 기록 직전에 감쇠를 먼저
적용합니다.
    let s=prev.s||0, f=prev.f||0;

    const n=Number.isFinite(Number(count)) ? Math.max(0, Number(count)) : 0;
    const boost=Math.min(0.5, n/20); // 모기 수 가중치 상한은 0.5입니다.
```

```
    if(detected){ s += 1 + boost; } else { f += 1; }

    d[country]={s,f,t:now()};
    save(d);

    const a=1+s, b=1+f;
    return {p:a/(a+b), a, b};
  }

  // ==================== 신규: 상단 버튼 생성 및 배치 ====================
  const topBtn=document.createElement('button');
  topBtn.id='mm-top-btn';
  topBtn.type='button';
  topBtn.setAttribute('aria-label','Open Malaria Meter');
  topBtn.innerHTML='□<span class="label">Malaria detector</span><span class="mosq-tag">Caution</span>';
  document.body.appendChild(topBtn);

  function placeTopBtn(){
    const r=(rail()||document.body).getBoundingClientRect();
    const left=Math.max(8, r.left||14);
    const top=Math.max(8, (r.top||150) - 28);
    topBtn.style.left=left+'px';
    topBtn.style.top=top+'px';
  }
  window.addEventListener('scroll',placeTopBtn,{passive:true});
  window.addEventListener('resize',placeTopBtn);
  placeTopBtn();

  // ==================== 신규: 팝업(고정, 카드 위로 겹치지 않음) ====================
  const pop=document.createElement('div'); pop.id='mm-pop-fixed';
  pop.innerHTML='<h3>Malaria Meter</h3>'
    + '<label><input type="radio" name="mmstat" value="1"> Detected</label>'
    + '<label><input type="radio" name="mmstat" value="0" checked> Not detected</label>'
    + '<label>Mosquito count (optional) <input id="mmcount" type="number" min="0" step="1" placeholder="Leave blank if unknown"></label>'
    + '<div class="row"><button id="mm-save">Save</button><button id="mm-close">Close</button><button id="mm-reset" title="Clear this country">Reset</button></div>'
    + '<div id="mm-out" style="margin-top:6px;font-size:.78rem;opacity:.9"></div>'
    + '<div id="mmhelp">Important: Malaria risk varies by region. Vaccines exist but availability can be limited and do not replace prevention (nets, repellents, chemoprophylaxis). This tool is not medical advice.</div>'
    + '<div style="margin-top:4px;font-size:.78rem;color:#0b77d5">Beta-Bernoulli posterior probabilistic decision AI</div>';
  document.body.appendChild(pop);

  function anchorPopAboveRail(){
    const r=(rail()||document.body).getBoundingClientRect();
    const vw=window.innerWidth; const pw=Math.min(360, vw-24);
```

```
    pop.style.maxWidth=pw+'px';
    const left=Math.max(8, Math.min(vw-pw-8, r.left));
    pop.style.left=left+'px';
    const top=Math.max(8, r.top - pop.offsetHeight - 12);
    pop.style.top=top+'px';
  }

  function openPop(){
    const nm=base(nameEl()?.textContent||'');
    const r=posterior(nm);
    document.getElementById('mm-out').textContent = r ? ('Posterior risk
'+Math.round(r.p*100)+'% with '+Math.round(r.a+r.b-2)+' samples.') : '';
    document.getElementById('mmcount').value='';
    pop.style.display='block';
    anchorPopAboveRail();
  }
  function closePop(){ pop.style.display='none'; }

  topBtn.addEventListener('click',function(e){ e.stopPropagation(); openPop(); });
  document.getElementById('mm-close').addEventListener('click',closePop);
  document.addEventListener('click',function(e){
    if(pop.style.display==='none') return;
    if(!pop.contains(e.target) && e.target!==topBtn) closePop();
  });

  document.getElementById('mm-save').addEventListener('click',function(){
    const nm=base(nameEl()?.textContent||''); if(!nm) return;
    const
detected=(pop.querySelector('input[name="mmstat"]:checked')||{}).value==='1';
    const cnt=Number(document.getElementById('mmcount').value||'');
    const res=record(nm,{detected,count:cnt});
    document.getElementById('mm-out').textContent='Posterior risk
'+Math.round(res.p*100)+'% with '+Math.round(res.a+res.b-2)+' samples.';
    updateBadge();
  });

  document.getElementById('mm-reset').addEventListener('click',function(){
    const nm=base(nameEl()?.textContent||''); if(!nm) return;
    const d=load(); delete d[nm]; save(d);
    document.getElementById('mm-out').textContent='Reset complete.';
    updateBadge();
  });

  // ==================== 신규: 배지 갱신 및 이름 변화 감시
====================
  function updateBadge(){
    const nm=base(nameEl()?.textContent||''); if(!nm) return;
    const r=posterior(nm); const tag=topBtn.querySelector('.mosq-tag');
    if(r && r.p>=CAUTION_THRESHOLD && r.a+r.b-
2>=MIN_SAMPLES){ topBtn.classList.add('warn'); tag.textContent='Caution'; }
    else{ topBtn.classList.remove('warn'); }
  }
  if(nameEl()){
    const mo=new MutationObserver(function(){ updateBadge(); placeTopBtn(); });
```

```
    mo.observe(nameEl(),{childList:true,characterData:true,subtree:true});
  }

  // ==================== 신규: 초기 안정화 ====================
  (function bootstrap(){
    let k=0;
    const id=setInterval(()=>{placeTopBtn(); updateBadge(); if(++k>10)
clearInterval(id)},120);
  })();

  // ==================== 신규: 간단 검증 로그 ====================
  (function sanity(){
    try{
      const t='__MM_TEST__';
      const a=posterior(t).p;
      const b=record(t,{detected:true,count:10}).p; // 최대 가중치 적용
      const c=record(t,{detected:false,count:0}).p;
      if(!(a>=0 && b>a && c<b)) console.warn('[Malaria Meter] update order check
failed');
    }catch(err){ console.warn('[Malaria Meter] self-check warn',err); }
  })();

})();
</script>
```

-->