STEPHEN ZHANG

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ROBLOX SIMULATOR GAME - OFF SHIFT STUDIOS

What?

- Developed and optimized core gameplay mechanics for a Roblox simulator game
- Created 3D models with low polygon counts for performance optimization

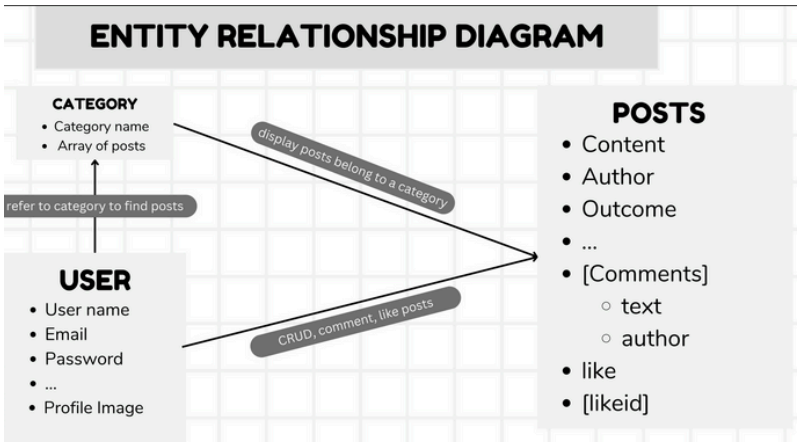
How?

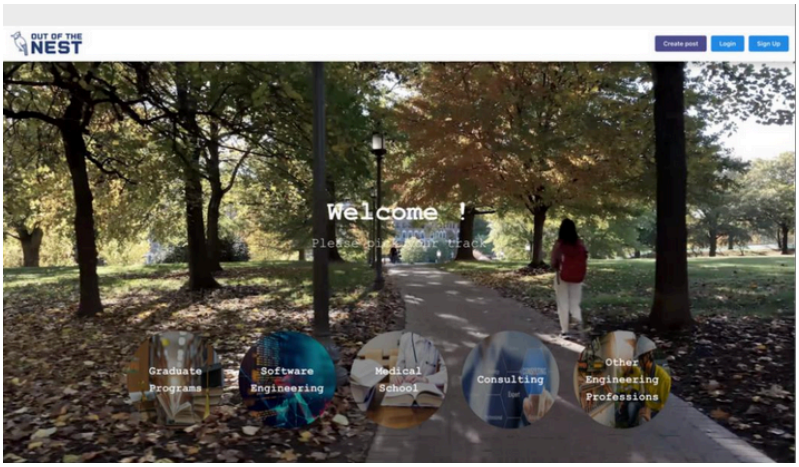
- Used **Lua** and Roblox DataStore to program key gameplay mechanics
- Designed 3D models using **Blender**

Results

- Created a community of **40+ active players and 500+ times played**
- Programmed Lua scripts to create a quest and obstacle course system
- Improved **game responsiveness and loading speed by 20%**

STUDENT HELP FORUM APPLICATION - JOHNS HOPKINS UNIVERSITY





What?

- Designed different object relationships and fields for **front-end and back-end components**
- Developed **CI/CD** pipelines with automated testing

How?

- Worked with **GitHub** and deployment with Vercel
- Used **entity relationship and UML diagrams** to plan ahead before programming

Results

- Achieved **80% test coverage** using **Jest**
- Developed **full-stack** web application using the **MERN-stack** to enable real time Q&A for student collaboration

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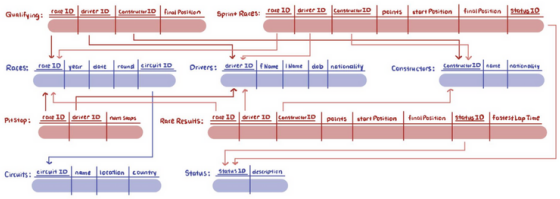
FORMULA ONE DATABASE INQUIRY - JOHNS HOPKINS UNIVERSITY



```
CREATE OR REPLACE VIEW AccidentsView AS
SELECT A.name, A.location, A.accidents, COUNT(R.circuitID) AS numRaces
FROM (
    SELECT C.circuitID, C.name, C.location, COUNT(C.circuitID) AS accidents
    FROM Circuits AS C, Races AS R, RaceResults AS RR
    WHERE C.circuitID = R.circuitID AND
        R.raceID = RR.raceID AND
        (RR.statusID = 3 OR RR.statusID = 4)
    GROUP BY C.circuitID
) AS A, Races AS R
WHERE A.circuitID = R.circuitID
GROUP BY R.circuitID;

CREATE OR REPLACE VIEW RaceWinnersView AS
SELECT RR.raceID, RR.driverID, R.circuitID
FROM Races AS R, RaceResults AS RR
WHERE R.raceID = RR.raceID AND
    RR.finalPosition = 1;
```

What?

- Structured a relational model with **8 primary keys and 13 foreign keys** to efficiently query results
- Created visual representations in tables and graphs for query results

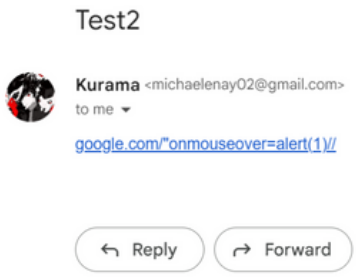
How?

- Used **SQL and PHP** to show query results in tables and graphs
- Refactored complex JOIN statements and minimized nested subqueries

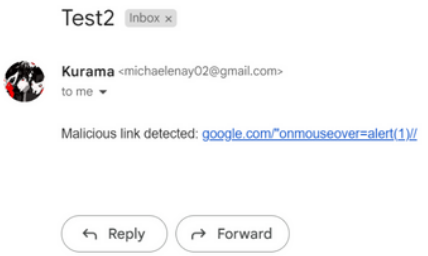
Results

- Improved retrieval speed by **50% for 40,000+ records**
- Allowed users to visualize query results for **20+ interactive tables and charts**

XSS EMAIL SCANNER CHROME EXTENSION - JOHNS HOPKINS UNIVERSITY




```
let embeddedLinks = link.match(/<\s*(?:iframe|script).*?src\s*=\s*["']?(.*?)["']?/);
if (embeddedLinks) {
  for (let i = 1; i < embeddedLinks.length; i++) {
    if (checkLink("href=\"" + embeddedLinks[i] + "\"")) {
      return true;
    }
  }
}
return false;
```



What?

- Developed a **Chrome extension** to detect XSS threats in emails

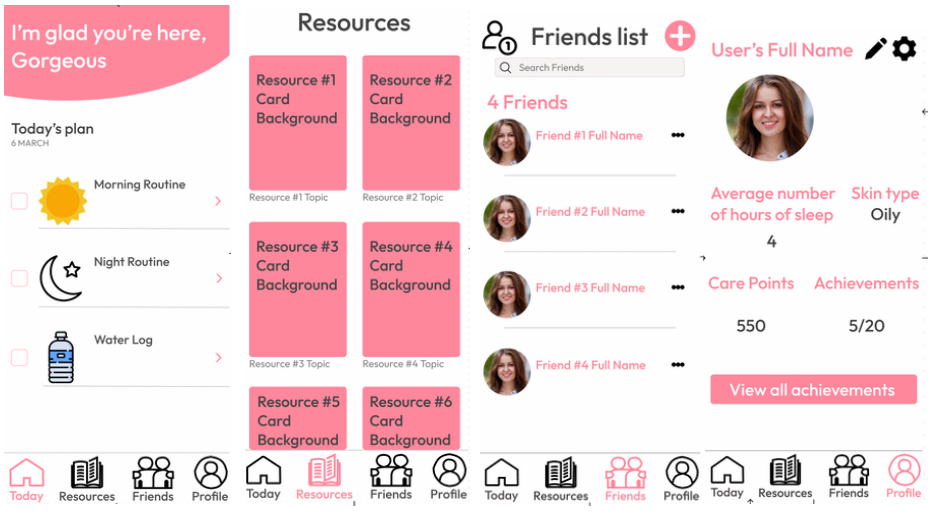
How?

- Used a **6,000-entry XSS payload database** to detect malicious links
- Coded in **JavaScript, HTML, and CSS**

Results

- Warns user of potential malicious links when opening emails

SKINCARE MOBILE APPLICATION - JOHNS HOPKINS UNIVERSITY



What?

- Used **Java and Firebase** to develop a skincare mobile app for users to create healthy habits

How?

- Implemented **cloud computing solutions for secure data storage** and user authentication
- Designed app layout and color schema using **Figma with 30+ pages**

Results

- Created a **Java** based mobile app with an intuitive layout and securely stores user data through **Firebase**