Dwight Look College of
ENGINEERING
TEXAS A&M UNIVERSITY

Team 28: Power Outage Education App

Bi-Weekly Update 1

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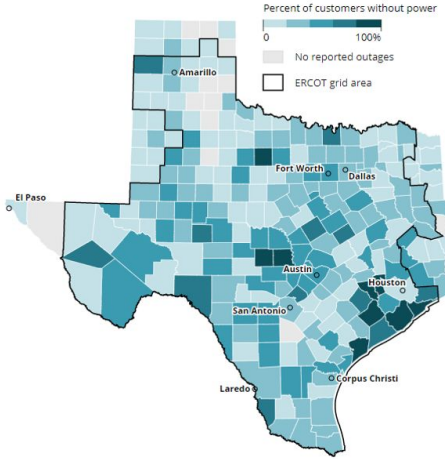
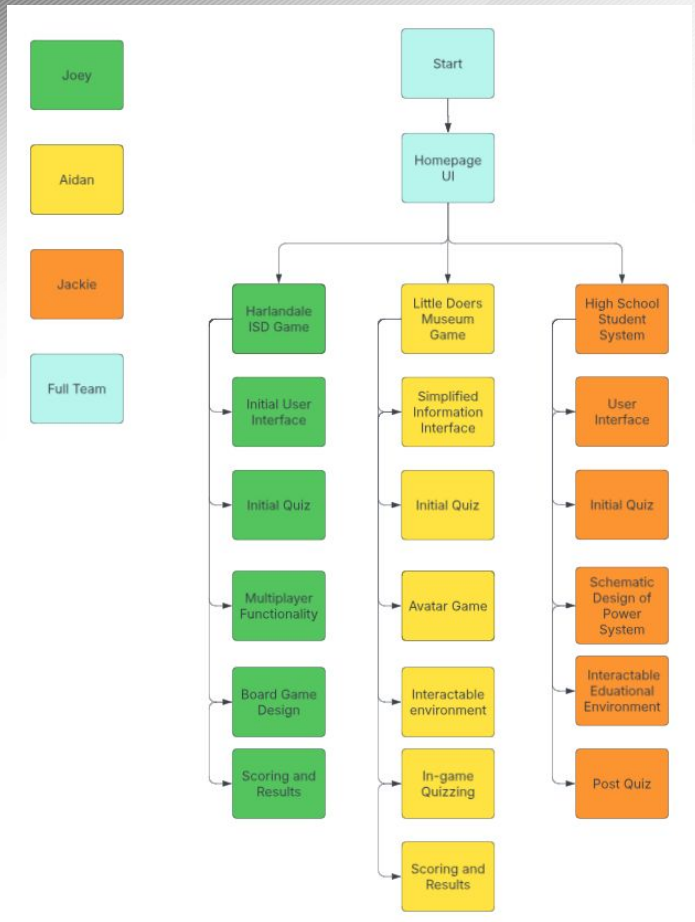
TA: Swarnabha Roy

Project Summary

- Problem statement: “Being unprepared for power outages can have a big impact on daily lives.”
- Solution: Educate students about the impact of power outages utilizing engaging, interactive apps.



Project Overview



- Elementary School
  - Exploration-based game
  - Pre-Quiz and Post-Quiz
- Middle School
  - Interactive Quiz Game
  - Rudimentary Circuit Simulator
- High School
  - Outage Impacts & Causes
  - Mitigation Measures
  - Post-Quiz

Major Project Changes for 404

Changes in project direction:

- Cross-platform compatibility with IOS and Android is no longer included in the design.
- A new integration method change being investigated.
    - Opening Unity apps from Flutter vs. Direct Unity/Flutter integration

Project Timeline

Progress made in ECEN 403:

- Each core individual subsystems are complete
  - Basic UI, some placeholders

Plan for ECEN 404:

- Research and execute subsystem integration
  - Currently in progress
- Remove placeholders and refine UI
- Continue testing app with intended audience

Elementary Subsystem

Owner: Aidan Petropoulos

Accomplishments since 403 8 hrs of effort	Ongoing progress/problems and plans until the next presentation
– 6 scenes/areas of gameplay have built – 10 in-game questions have been completed – Scene transitions implemented (player can move between areas) – Score tracker completed – Game scales between phones and tablets – Touch screen capability	–More interactions with NPC's –Begin refining art assets/animations for at least 2 scenes

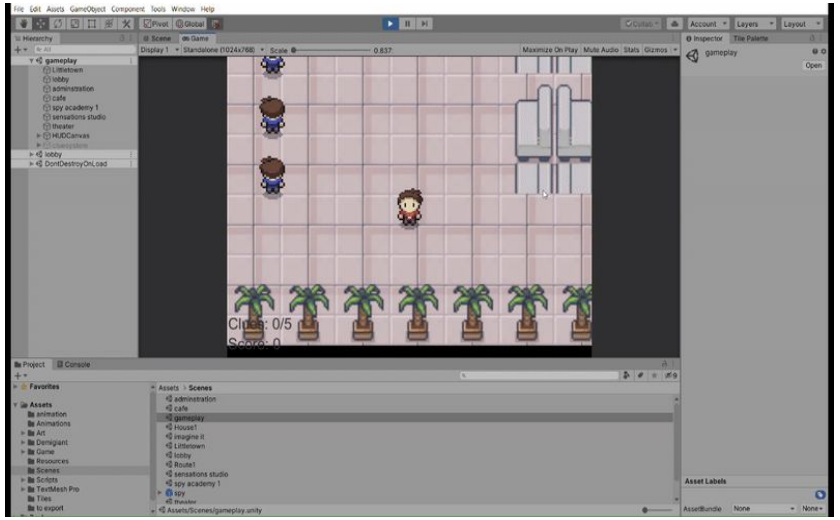
Elementary subsystem

Aidan Petropoulos

What works:
-Player movement works
-NPC interaction works
-Clue system

What doesn't:
-Next scene does not preload before player arrival

What is changing:
-Clue background



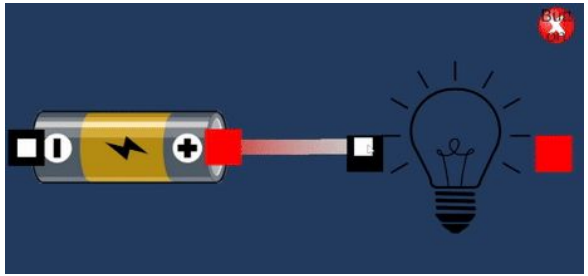
Middle School Subsystem

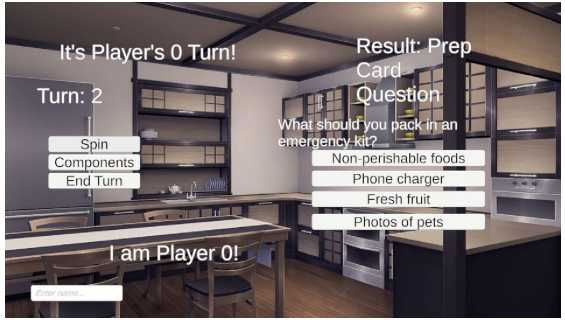
Owner: Joey Raphael

Accomplishments since 403 9 hrs of effort	Ongoing progress/problems and plans until the next presentation
- Verified that game can host / complete a game from desktop platform - Reaches performance metrics (<2GB RAM usage, <1MB network packet size) - Playtested game with sample group of 14 students, gathered data / criticism - UI properly scales for supported devices (text readable from up to 50 cm, no trimming)	- Implementing feedback from final demo / playtest (game tutorial, more intuitive UI, polish) - Issues with client connections from mobile devices, rewriting netcode - Adding more circuit components to simulator

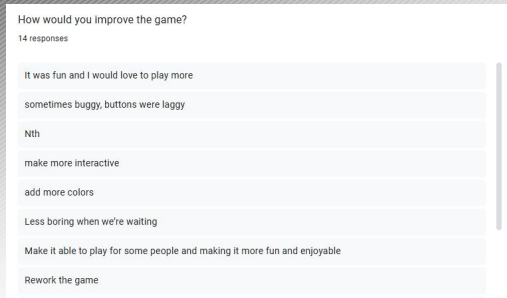
What's Working?

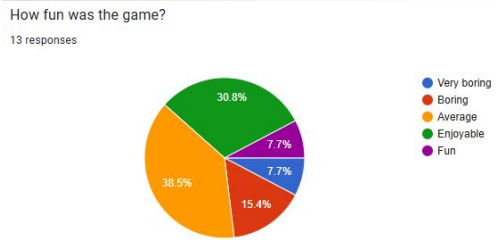
Functional	Not Functional / Issues
- Game can be completed from start to finish with working multiplayer functionality on desktop computers - Circuit simulator backend (can detect connections, currently only supports battery and LED)	- Latency spikes when interacting with UI buttons - Issues with client connections from mobile devices, not all data is synced correctly - Only one instance of the game can happen on network

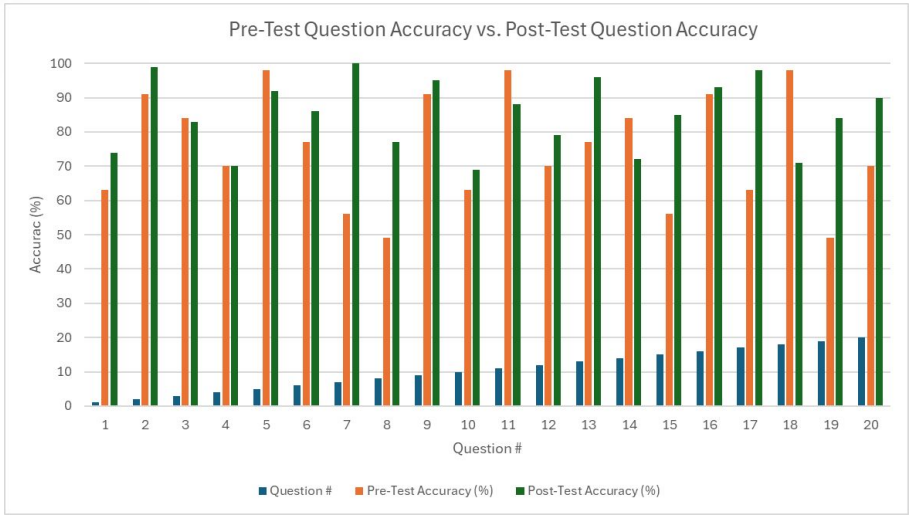




Playtest Feedback







- ~80% of surveyed students enjoyed the game
- Common issues reported
  - Lag
  - More interaction during “waiting” periods
  - Lack of error handling regarding bad/unstable connections
  - Unclear instructions
- Average of 18% question increase between pre- and post- game

High School Subsystem

Jackie Villanueva

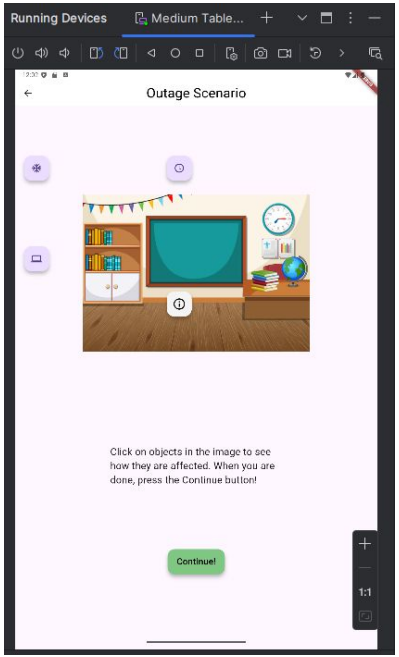
Accomplishments since 403 10 hrs of effort	Ongoing progress/problems and plans until the next presentation
- Reviewed UI and navigation issues - Verified app functionality	- Continue research and creating foundation for Flutter/Unity Integration -Integrate the Elementary game with Flutter -Procure tablet for testing

- Goal: Understand if it is possible to integrate Unity in Flutter
  - Investigate possible issues and troubleshoot individual subsystems if needed

High School Subsystem Issues

Jackie Villanueva

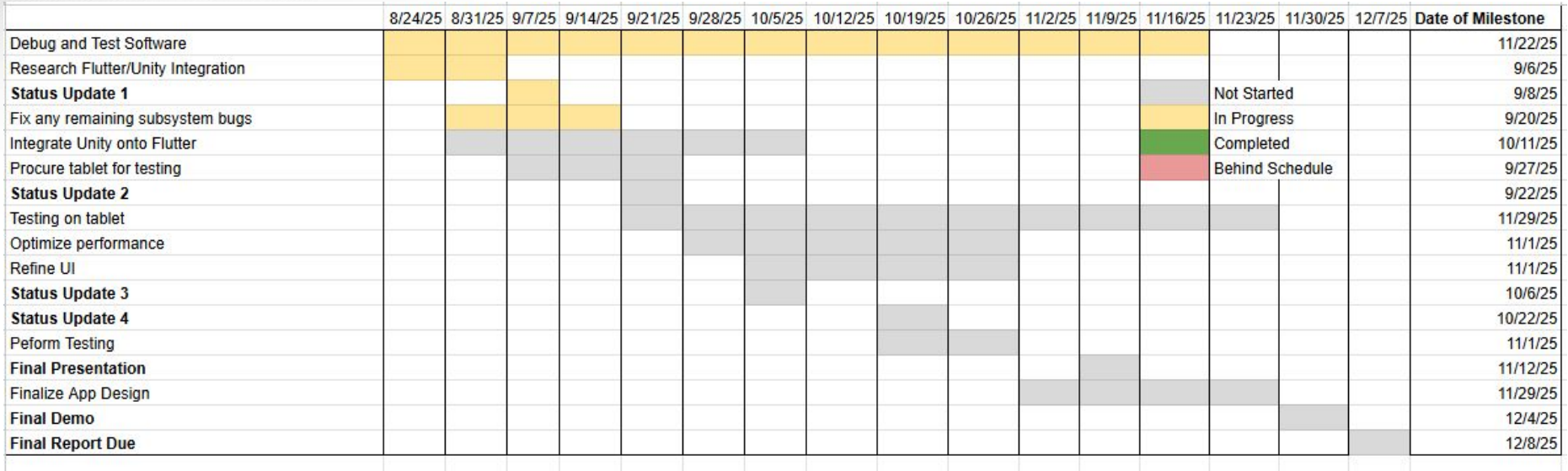
- System only navigates linearly.
  - Goal: select prior pages after opening the page
- Fix UI issues
  - Prevent user from rotating the phone/tablet
- Remove placeholder information



Parts Ordering Status

- Currently, the team plans to contact our sponsor and DoSeum Point of Contact to learn the tablet specifications that testing will be done on.
- Upon learning the details, an order will be placed for the the same tablet or a similar device
    - Expected Date to order: 9/10/2025
    - Expected Arrival of device: 1-3 weeks following the order

Execution Plan - Fall 2025



	8/24/25	8/31/25	9/7/25	9/14/25	9/21/25	9/28/25	10/5/25	10/12/25	10/19/25	10/26/25	11/2/25	11/9/25	11/16/25	11/23/25	11/30/25	12/7/25	Date of Milestone
Debug and Test Software																	11/22/25
Research Flutter/Unity Integration																	9/6/25
Status Update 1																	9/8/25
Fix any remaining subsystem bugs																	9/20/25
Integrate Unity onto Flutter																	10/11/25
Procure tablet for testing																	9/27/25
Status Update 2																	9/22/25
Testing on tablet																	11/29/25
Optimize performance																	11/1/25
Refine UI																	11/1/25
Status Update 3																	10/6/25
Status Update 4																	10/22/25
Peform Testing																	11/1/25
Final Presentation																	11/12/25
Finalize App Design																	11/29/25
Final Demo																	12/4/25
Final Report Due																	12/8/25

Validation Plan - Fall 2025

Milestone #	Test	Detail	Validation Method	Data	Status
1	App Functionality Testing	App successfully opens and does not crash, lag, or glitch.	Boot up the app and navigate through all systems of the app.	N/A	Untested
2	Subsystem Objective Completion	Each subsystem can be played from start to end.	Run through each individual subsystem and reach the 'end.'	N/A	Untested
3	User Interface Consistency	The UI is functional and consistent when run on an Android phone or tablet.	Run the app on an Android phone and tablet. Confirm the correct functionality of each button.	N/A	Untested
4	Offline and Online Functionality	The app has different interfaces for if it is online or offline.	Run the software with and without wifi. Check if the interface correctly differs between the two scenarios.	N/A	Untested
5	Multiplayer functionality (Middle School System)	User is able to communicate to another user in-game.	Simulate two instances of the app on the same 'network.' The two 'users' play and complete an instance of the game.	N/A	Untested
6	Nonlinear progression (High School Subsystem)	The user can navigate back to preivous tabs that have already been accessed	Progress through the high school subsystem. Using the appbar on the top, confirm that previous 'tabs' may be accessed, then return to the most current tab.	N/A	Untested
7	Flutter and Unity	Unity apps successfully open and run without issue from Flutter.	Click Elementary and middle school tabs from Flutter base. Play through the individual games for both.	N/A	Untested
8	Learning Outcomes (Elementary)	Students demonstrate improved understanding of foundational concepts after playing.	Pre- and post-game quizzes, teacher feedback, observation.	N/A	Untested
9	Learning Outcomes (Middle School)	Students demonstrate improved understanding of targeted concepts after playing.	Pre- and post-game quizzes, teacher feedback, observation.	N/A	Untested
10	Learning Outcomes (High School)	Students demonstrate improved understanding of advanced concepts after advancing through the curriculum.	Post content quiz, teacher feedback, observation	N/A	Untested

Questions?