

Product Backlog



Team 27

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Problem Statement:

As students enter the Purdue Computer Science program, many begin coursework with limited or no prior experience. Therefore, students often have little knowledge about what concentrations or research areas they would like to explore. As a solution, we will develop a web-based game that will introduce students to problems from a variety of courses and computer science topics. Currently, there are limited resources to explore course content, therefore, this game will be a unique and visual solution.

Background Information:

Audience

Our target users would be prospective Purdue students considering a major or minor in the field of computer science, as well as current students who wish to explore the courses and concentrations offered by the Computer Science Department. Our web-based game will provide users with a fun and interactive means to explore areas of interest within each course.

Similar Applications

The only pre-existing application that provides an overview of course content for Purdue computer science students is the myPurdue course catalog. Currently, students are limited to researching past syllabi and course descriptions to determine course content. While there are ample resources online to explore computer science topics, this information can be overwhelming and often beyond the scope of the course subject matter. Therefore, our aim is to provide a fun and interactive application that will allow students to explore specific computer science courses offered at Purdue University.

Limitations

While syllabi and course descriptions on the Purdue University webpage do provide some insight to the subject matter of each course, this information can be overwhelming and unfamiliar to a novice in the field of computer science. We will address this limitation by developing an interactive application that explores course subject matter through a course summary, games, and puzzles. These course summaries, games, and puzzles will provide a brief introduction to core concepts in each course. Additionally, students have limited resources available to help determine which concentration would best suit their interests. Purdue provides counseling and lists of course requirements for each concentration, but to date there is no interactive application that allows students to explore concentrations based on course subject matter. Therefore, we will address this limitation by allowing users to rank the games and puzzles as they progress through the levels (i.e. core courses). Upon completion, the application will provide recommended concentrations based on the courses the user ranked highest.

Requirements:

Functional:

- **As a user, I would like to:**
 1. create a new account.
 2. login to my account.
 3. create a profile (if time allows).
 4. update my profile (if time allows).
 5. add a name to my profile account (if time allows).
 6. add a photo to my user profile (if time allows).
 7. add a gender to my user profile (if time allows).
 8. add an "About" section to my user profile (if time allows).
 9. have the option to reset my password.
 10. view a brief set of instructions for how to play the game.
 11. begin the game at the entry level.
 12. move my character through the levels one at a time using arrow keys.
 13. clearly see what levels I have completed.
 14. complete various puzzles and games for each level, i.e. each course.
 15. complete puzzles and games that introduce core topics from each course.
 16. have to option to use hints when needed.
 17. be scored based on my performance in each level.
 18. view my position on the leaderboard (if time allows).
 19. see and save my progress after each level.
 20. be able to repeat a level.
 21. rank each puzzle and game as I progress through the levels.
 22. complete every level to complete the game, i.e. "graduate".
 23. receive a list of recommended tracks based on analysis of my rankings.
 24. have multiple puzzles for each level i.e. course (if time allows).

- **As a developer, I would like to:**

1. verify the user has a Purdue email.
 - a. If the user does not have a Purdue email, show a warning that says that this game is designed for Purdue students.
2. have each account associated with a unique email and password.
3. record the levels completed by each user.
4. record the score associated with each level.
5. deduct points if the player uses hints.
6. record the ranking associated with each level.
7. create an algorithm that factors in the score for each level and the ranking for each level to create a final list of recommended tracks.
8. provide a progress bar (if time allows).
9. create a leaderboard (if time allows).
10. create a visual moving player based on the gender specified (if time allows).

Non-Functional:

1. The game will be a web-based application.
2. There will be an SQL database to store user information.
3. We will use PixiJS as a framework for our web application development.
4. We will use Flask and Python on the server side.
5. We will protect against SQL injections.
6. The interface will be user-friendly.
7. Upon completion of the game the player will be presented with an analysis of rankings and scores to show which computer science track would best suit them.
8. The game will be iPhone accessible (if time allows).