Superhero Camp

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Superhero Camp

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SUPERHERO CAMP
BEN FENNEL AND MATT CZAJKA
PROJECT OVERVIEW

• Project Objectives & Description
• System Technical Overview
• Engineering Process Methodology
• Engineering Test Methodology
• Engineering Key Work-Products
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  • Architecture Development/Models
  • Test Strategy/Test Cases/Expected Results/Corrective Actions
• Project Key Metrics
• Project Schedule/Key Milestones
• System Demonstration
• Academic Key Knowledge Acquired/Applied
• Strategic Value
• Questions
• Lessons Learned
• Possible Improvements

Project Mentor: Nicholas C. Bucciarelli, Ph.D
PROJECT OBJECTIVES & DESCRIPTION

• Primary objectives:
  • Build a exercising app for iOS using xcode that is geared toward a younger crowd
  • Provide a scoring/achievement system that provides the user with incentive
• The app has three difficulties (easy, medium, and hard) for the user to choose from, each increasing in weight, reps, and duration.
• There are four different superheroes to choose from, each having a complete workout tailored to the character.
• The higher the difficulty, the more points the user earns once the workout is completed.
• Once a certain threshold is reached, the user will receive an achievement for that specific superhero
SYSTEM TECHNICAL OVERVIEW

- App works mainly over UI
  - Code works in background
- User works with the UI only
  - User never needs to input anything
  - User only ever sees view controllers
- Code keeps the user playing/working out
  - Code generates the score which keeps the user going
ENGINEERING PROCESS METHODOLOGY

Step 1 (Brainstorm)
• Think of an idea and the framework to create it

Step 2 (UI)
• Build the grid and the UI layouts

Step 3 (Code)
• Create code for buttons

Step 4 (Testing)
• Test the system to make sure there is no holes

Step 5 (Finalization)
• Present showcased app

Project Mentor: Nicholas C. Bucciarelli, Ph.D
ENGINEERING TEST METHODOLOGY

Unit Testing

• Test the segues for each superhero
• Be able to go through the workout with no problem
• Make sure that the points are passed through
• All workouts are accessible

System Testing

• Make sure that there is no way to break the app
• Go into the app and try to spam points/views
• Check that no glitches are possible
# Requirement Analysis

## Requirements Traceability Matrix

<table>
<thead>
<tr>
<th>ID</th>
<th>Req. ID</th>
<th>Functional Requirement</th>
<th>Technical / System Requirement</th>
<th>System Design(s) based on UML Models Specification</th>
<th>System Component(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>031</td>
<td></td>
<td>Application that will assist people in workouts and training plans.</td>
<td>The application will provide 4 different superhero type workouts all with different difficulties.</td>
<td>Application will have a tab based system shown on the screen. From there, the user will be able to choose menu or a superhero.</td>
<td></td>
</tr>
<tr>
<td>032</td>
<td></td>
<td>Application will provide 4 different workouts based on 4 different superheroes.</td>
<td>Application will give the option of Hulk, Flash, Superman, Wonderwoman.</td>
<td>Workouts will have different types of exercises based on the certain superhero.</td>
<td>Workouts will be on a push-to-next basis.</td>
</tr>
<tr>
<td>033</td>
<td></td>
<td>Within each superhero type workouts, Application will provide 3 different difficulties.</td>
<td>The three different difficulties will be easy, medium, hard.</td>
<td>After the user selects a superhero, they will be prompted to choose a difficulty based on that superhero.</td>
<td></td>
</tr>
<tr>
<td>034</td>
<td></td>
<td>General scoring will be made throughout the application.</td>
<td>Scoring will be based off of the difficulties at which a workout is completed.</td>
<td>For an easy workout, a user will earn 2. For a medium workout, a user will earn 5. For a hard workout, a user will earn 10.</td>
<td>Scoring will be added once the user hits &quot;complete workout&quot; button at the end. Score will be kept on the device.</td>
</tr>
<tr>
<td>035</td>
<td></td>
<td>Motivation to keep going will be based on achievements at every 100 points.</td>
<td>At every 100 points the user will gain the achievement of a &quot;special ability&quot;.</td>
<td>Score will be posted constantly on top right corner. After 500 points, user won't receive &quot;special abilities&quot;.</td>
<td></td>
</tr>
<tr>
<td>036</td>
<td></td>
<td>Application will provide an instruction screen.</td>
<td>Users will be able to push a button to take them to an instruction screen.</td>
<td>Instruction screen will inform the user how the app works and any possible questions the user may have on the application. This screen will also give credit to the project and the creators of it all.</td>
<td>There will be a information button, which will be connected to a instructions page, this page will have a back button to the main menu.</td>
</tr>
</tbody>
</table>
ENGINEERING KEY WORK-PRODUCTS

Architecture Development

Main Menu
- GoTo (Hulk tab)
- GoTo (Superman tab)
- GoTo (Flash tab)
- GoTo (Wonderwoman tab)
- GoTo (Info tab)

Hulk
- GoTo (Easy)
- GoTo (Medium)
- GoTo (Hard)

Flash
- GoTo (Easy)
- GoTo (Medium)
- GoTo (Hard)

Wonderwoman
- GoTo (Easy)
- GoTo (Medium)
- GoTo (Hard)

Superman
- GoTo (Easy)
- GoTo (Medium)
- GoTo (Hard)

Info Page
- GoTo (Main Menu)

Easy/Med./Hard Workout
- GoTo (Next Exercise)

Easy/Med./Hard Workout
- GoTo (Next Exercise)

Easy/Med./Hard Workout
- GoTo (Next Exercise)

Easy/Med./Hard Workout
- GoTo (Main Menu)

Easy/Med./Hard Workout
- GoTo (Main Menu)

Easy/Med./Hard Workout
- GoTo (Main Menu)

Easy/Med./Hard Workout
- GoTo (Main Menu)
Test Strategy

- Open up the app
- Test the tabs
- Test the difficulties
- Run through each superhero
  - Each superhero, each difficulty
- Spam any button
  - Reset button, difficulty buttons, finish buttons
- Switch through views/tabs fast
PROJECT KEY METRICS

UI Key Metrics
• Key milestones: finish one superhero at a time
• Use same framework/dimensions for pictures/labels
• Each superhero use same layout
  • Each difficulty uses same layout throughout own superhero

Code Key Metrics
• Key milestones: finish one difficulty at a time
• Use same framework/code for buttons
• Each superhero uses same code (essentially)
  • Each button uses same logic
    • When clicked, add points to overall score

Project Mentor: Nicholas C. Bucciarelli, Ph.D
PROJECT SCHEDULE/KEY MILESTONES

• Began with user interface and the structure of the app
  • Chose tabbed view controller
  • Had to add more controllers
• Added in difficulty buttons which branch off to different workout sets
  • Create grid for easier view of all controllers based on heroes
• Formatted the images and labels on each workout
  • Create layout based on dimensions that works on view
• Wrote out code for scoring system and alert messages
  • Write code from previous products that work
SYSTEM DEMONSTRATION

Main Menu

Workout in Progress

Completed Workout

Superhero Scores

Hulk: 0
Flash: 0
Superman: 0
Wonderwoman: 0

Pushups; 3 Sets Of 25

Finish >

Hulk Completion Message
Great Work! You have completed one of Hulk’s workouts! 10 points have been added to your score!

Choose a superhero

Menu Hulk Flash Superman Wonderwoman

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QUESTIONS
ACADEMIC KEY KNOWLEDGE ACQUIRED/APPLIED

• Nested if-statements
• The use of different aspects in xcode such as buttons, labels, and images
• The implementation of a main menu with different tabs
• Certain actions and scoring updates being applied as a button is pressed
• Updating the labels on the main menu with the user’s new score (whether adding or resetting)
STRATEGIC VALUE

• Superhero Camp provides a person in a younger demographic with the knowledge of which exercises to complete in any given workout at a difficulty of their choice.

• The app also encourages the user to continue on via its scoring system and numerous achievements.

• Each set of workouts is tailored to best correlate with the type of superhero chosen by the user
LESSONS LEARNED

• Image, button, and label sizing/positioning tends to cause the most problems.

• Creating achievements for every increment of a score of 100 was not as easy as we drew it out to be

• There may have been a simpler way to set up the menu/difficulty selection

• xcode is very strict with its conditions and integrations

• Such a simple concept of an app requires a ton of work

Project Mentor: Nicholas C. Bucciarelli, Ph.D
POSSIBLE IMPROVEMENTS

• Adding the ability to create their own workouts based on a database of exercises
• Adding the ability to either delete all the scores separately or all at the same time
• Adding the ability to log in/out and view the scores of other users on a type of leaderboard
• Add a function that when a new exercise is started, the ability to move past it is restricted for a certain period of time