

PongX

Team 12 - Product Backlog

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Problem Statement:

As one of the earliest video games to hit arcades, Pong became an instant classic; although it has stood the test of time for the most part, Pong has lost its luster with its “two-dimensional” gameplay (literally and figuratively), especially when compared to modern video games: the result of 45 years of innovation in the industry. As a result, we seek to bring Pong back to life with exciting new game mechanics, while maintaining the classic retro vibe we’ve all come to love.

Background Information:

Audience:

Our target audience are children and young adults, since those will be the main audience interested in our game.

Similar Platforms:

The main games we are taking inspiration from are Pong and Breakout, and we plan to tie ideas from both of them and create our own individual game.

Limitations:

The limitations include not being able to play against people online. This will be an offline single-player versus AI or two-player game. Additionally, there will be no fair way to match players based off of skill and that could lead to many losses or victories.

Environment:

Our environment will consist of Java to implement the Pong game. We will be using IntelliJ to put the application together. We will additionally be using git to push our changes to two different branches. The branches will include a completely functioning version of the game and a bugged version that will be used for testing.

Functional Requirements:

Gameplay:

#	Functional Requirement	Hours	Status
1	As a user, I would like to be able to move my paddle horizontally.	2	Planned for sprint 1

2	As a user, I would like to have the option to play again after a game ends.	2	Planned for sprint 1
3	As a user, I would like to have my score displayed while I'm playing the game.	4	Planned for sprint 1
4	As a user, I would like to play against an AI.	10	Planned for sprint 1
5	As a user, I would like to see my score displayed after losing.	2	Planned for sprint 1
6	As a user, I would like to have 2-player functionality.	5	Planned for sprint 1
7	As a user, I would like to have power ups that increases/decreases the paddle's movement speed temporarily	4	Planned for sprint 1
8	As a user, I would like to have power ups that increase/decrease the ball's movement speed temporarily	4	Planned for sprint 1
9	As a user, I would like to have power ups that increase/decrease the size of my paddle temporarily	4	Planned for sprint 2
10	As a user, I would like to have power ups that increase/decrease the size of my ball temporarily	4	Planned for sprint 2
11	As a user, I would like to have power ups that increases/decreases the number of paddles I have temporarily	4	Planned for sprint 2
12	As a user, I would like power ups that increase/decrease the number of balls temporarily	4	Planned for sprint 2
13	As a user, I would like to have power ups that make the ball invisible with a pulsating light trail	4	Planned for sprint 2
14	As a user, I would like to have power ups that make the paddle invisible with a pulsating light trail	4	Planned for sprint 2
15	As a user, I would like to have a temporary "Sticky" paddle power up that makes the ball stick onto my paddle and release it when I want to with a press of a key	4	Planned for sprint 2
16	As a user, I would like to have a power up that temporarily changes the angles the ball bounces at.	4	Planned for sprint 2

17	As a user, I would like to have a power up that inverts my opponent's directional inputs temporarily	4	Planned for sprint 2
18	As a user, I would like to be able to pause the game.	3	Planned for sprint 1
19	As a user, I would like to be able to resume a game	2	Planned for sprint 1
20	As a user, I would like to be able to return to the main menu.	2	Planned for sprint 1
21	As a user, I would like to be able to view my scores.	5	Planned for sprint 2
	Total	77	

Frame:

#	Functional Requirement	Hours	Status
1	As a user, I would like to be able to start a single player game.	5	Planned for sprint 1
2	As a user, I would like to be able to start a two player game.	5	Planned for sprint 1
3	As a user, I would like to see the different effects of the power ups	5	Planned for sprint 2
4	As a user, I would like to be able to quit the game	5	Planned for sprint 1
5	As a user, I would like to see the rules for the game	5	Planned for sprint 1
	Total	25	

Non-Functional Requirements:

Response Time:

Images and other media will be compressed to a reasonable size in order to reduce response time.

Usability:

We want PongX's user interface design to be clean and organized so that any user can easily learn to navigate across the site. The design is significant because we want the users to be able

to play the game without a lot of confusion and stress - they should understand PongX's features and powerups instantly. We want PongX to work similarly across browsers as well.

Security:

Since we will be implementing a Java applet it will be loaded on a client when the user visits our page containing the game. The security model behind our Java applet will be designed with the goal of protecting the user from malicious applets. Java applets can run in two modes; sandbox and privileged. If the user does not 'trust' the an Applet, the game will only run in a "sandbox" where its actions are limited. This puts a lot on the user. Many users will click yes to any message/checkbox so they are not hindered in viewing a web page.

Use Cases:

Case 1: Start a single player game

Action	System Response
1. Hit Start Single Player Game button	2. Game Screen loads up
3. Player hits the left xor right arrow keys	4. The player's paddle moves left or right respectively.
5. Player's paddle makes contact with the ball	6. AI opponent adjusts to try and stop the ball from scoring.
7. Game continues on	8. Power up icons are randomly picked and placed on gameboard
9. Ball intersects with power up icon on the board	10. The game is effected by the respective action of the power up
11. The ball makes it past a contender's side	12. Score is increased and ball is reset in middle
13. Target score is reached	14. Message shown announcing the winner, and then buttons for "Play again" and "Quit" appear.

Case 2: Start a two player game

Action	System Response
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Hit Start Two Player Game button	2. Game Screen loads up
3. Player 1 hits left xor right arrow keys	4. Player 1's paddle moves left or right respectively.
5. Player 2 hits A xor D keys	6. Player 2's paddle moves left or right respectively.
7. Game continues on	8. Power up icons are randomly picked and placed on gameboard
9. Ball intersects with power up icon on the board	10. The game is effected by the respective action of the power up
11. The ball makes it past a contender's side	12. Score is increased and ball is reset in middle
13. Target score is reached	14. Message shown announcing the winner, and then buttons for "Play again" and "Quit" appear.

Case 3: Navigating the menu to select a single or two-player game

Action	System Response
1. Player selects Play Single-player Game	2. Game screen loads up for a vs. AI game
3. Player selects Play Two-player Game	4. Game screen loads up for a PvP game.
5. Player selects Quit	6. Program exits

Case 4: Learning how to play

Action	System Response
1. Player selects "How to Play" button	2. Opens the instructions
3. Player selects an image/upgrade	4. Loads the description of the image and the functionality
5. Player selects "Return"	6. Program displays Main Menu

Case 5: Checking high score

Action	System Response
1. Player selects "High Scores" button	2. Opens the high scores table with the best scores
3. Player scrolls through scores	4. All scores should be available
5. Player selects "Return"	6. Program displays Main Menu.

Case 6: Receiving an upgrade

Action	System Response
1. Player selects single player or two-player game	2. Game should launch and be runnable
3. Upgrade spawns in the arena	4. Upgrade is in the map and able to be hit
5. Player hits upgrade	6. Upgrade is applied to that player
7. Second upgrade spawns in the arena	8. Upgrade is in the map and able to be hit
9. Same player hits second upgrade	10. Upgrade is applied to that player again
11. Third upgrade spawns in the arena	12. Upgrade is in the map and able to be hit
13. Same player hits third upgrade	14. Upgrade is applied to that player again and first upgrade is removed if still applied