**Inheritance’17**

# Harry Potter App

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# Harry Potter App

## Abstract

Harry Potter app is basically a Java application with two features in it as of now. One can choose to test his Harry Potter knowledge by playing the Quiz or flex his muscles by Dueling. The basic gameplay of Dueling is the player and CPU wands shoot various spells at each other using keyboard. Player can fire Stupefy( key S) which freezes the opponent for about 10 seconds, Expelliarmus( key W) which disarms the opponent but the opponent can still move around to dodge spells and Protego( key R) which creates a rainbow shield around the player to protect himself from incoming spells.

### Completion status

The project is almost done, the only part that's remaining is beautifying the app by adding images in the background. We wished to incorporate a Quidditch section as well in the app but couldn't find a challenging gameplay for it so we decided to get back to it some other time. We were looking to create a database of all the players who play the game to save their progress and game levels as well.

## Softwares used

- Eclipse IDE
  Download link for Neon version 3 :- http://www.eclipse.org/downloads/packages/eclipse-ide-java-ee-developers/neon3

## Software and Code

GitHub link :- https://github.com/HP-App/Harry-Potter-App/tree/master/src/com/HPapp

For the Quiz part, every question is displayed on a new JPanel. The concept of CardLayout has been used to move to next question. For the Dueling part, there is a central class Game where the actual methods to run, update and render the game have been called. The Controller class controls the game objects Expelliarmus, Stupefy and Protego. The movements of player and opponent have been defined in the classes Player and WandEenemy respectively. The class KeyInput is just to organize the various key inputs that are taken during the course of game. For storing the position of all the objects at every instant, an abstract class GlobalPos has been defined and inherited by the objects. To render the graphics on the screen we have used Graphics and Graphics2D. Action listeners have been added wherever needed to listen to user input. The calculation part of the game is handled by update methods of various classes. There are a lot of game flags as well to control under what conditions a spell can be fired and under what conditions a collision will be considered as valid.

## Use and Demo

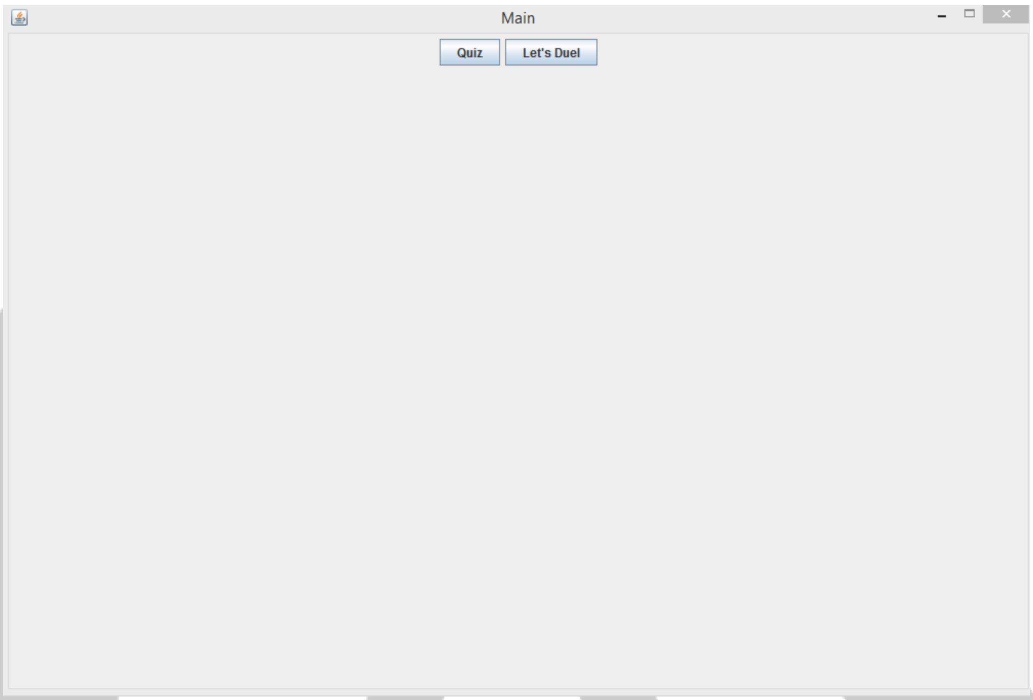
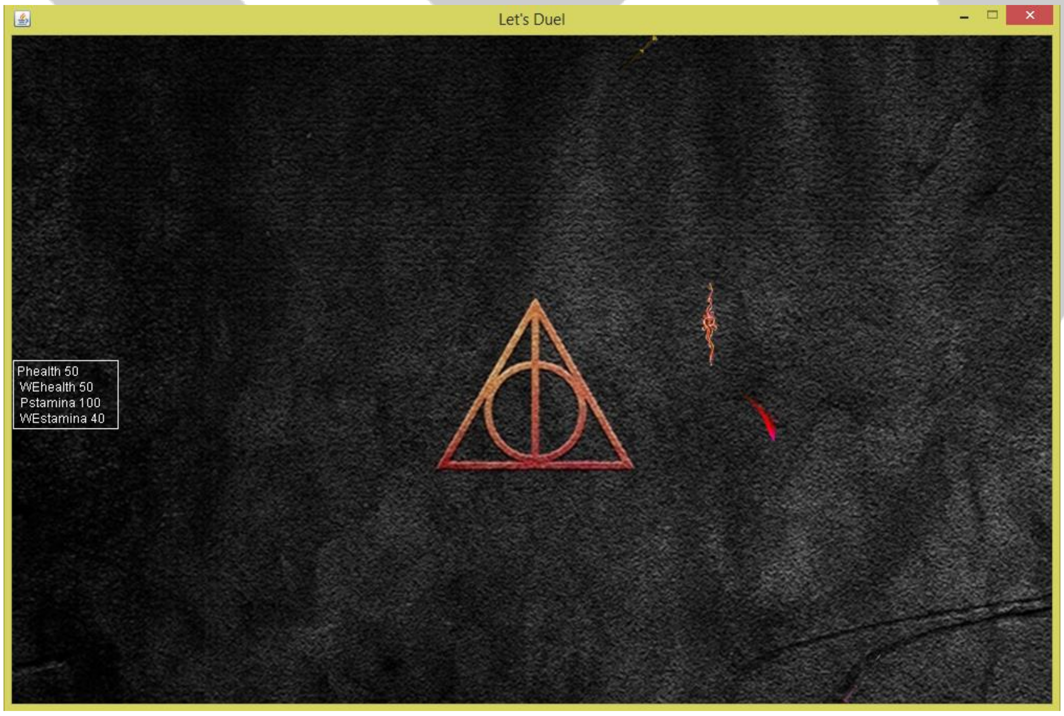


Fig 1:- Main App Window

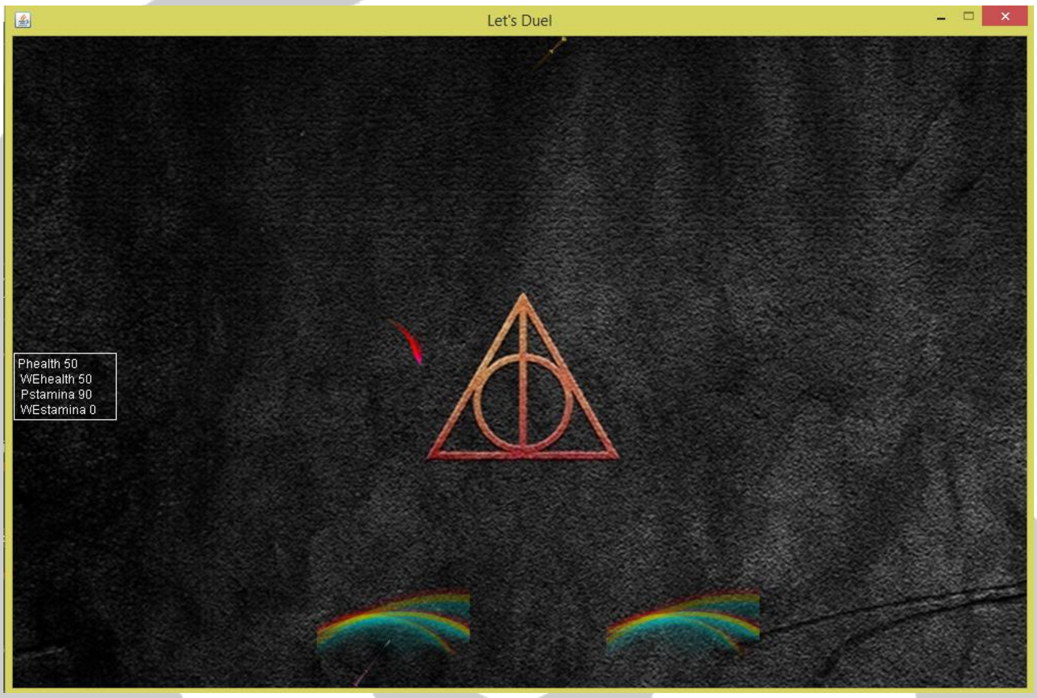
On running the app, user is prompted for two choices, to play quiz or to play duel game.



```
Phealth 50
WEhealth 50
Pstamina 100
WEstamina 40
```

Fig 2.1:- Dueling game: Stupefy and Expelliarmus

The wand at the bottom is the player and the top one is CPU wand. Pink colored spell is Expelliarmus which, on collision with wand, prevents it from shooting any more spells for 10 seconds. -10 stamina is deducted from the caster and -10 is deducted from the one who gets hit by this spell. The orange spell is Stupefy which, on collision with wand, freezes it thereby not allowing it to move as well as cast any spells for 10 seconds. -20 stamina is deducted from the caster and -20 is deducted from the one who gets hit by this spell.



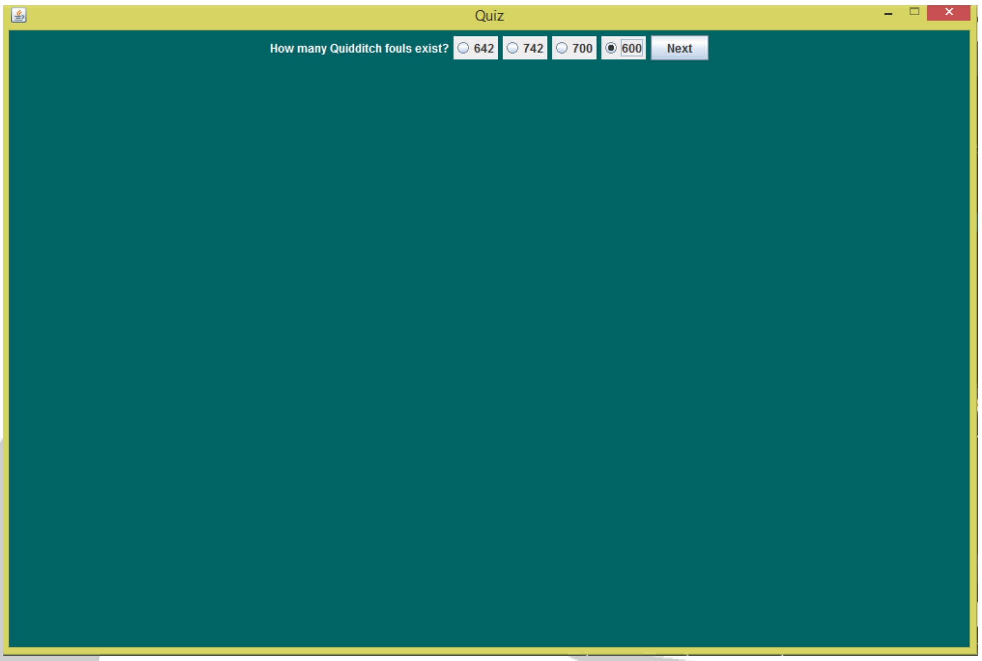
Phealth 50
WEhealth 50
Pstamina 90
WEstamina 0

Fig 2.2:- Dueling game: Protego

The rainbow shield is Protego spell behind which if a wand hides, it is not affected by any spell cast by the opposition. One Protego can bear 3 hits by opposition spell before disappearing. -5 stamina is deducted from the caster.

The game ends if:-

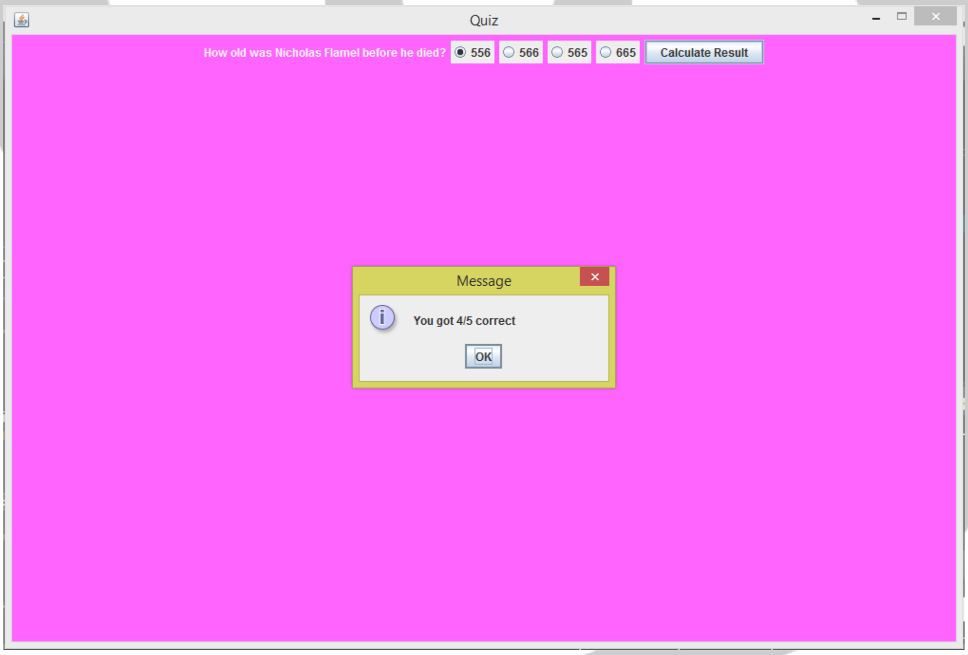
1. Either CPU wand's or user wand's health becomes zero.
2. Both CPU's and user's stamina becomes zero.



How many Quidditch fouls exist? 642 742 700 [✓ 600]

Fig 3.1:- Quiz Game: Question panel

One needs to select one option out of four possible answers for the question asked. Clicking on Next button submits your answer and loads the next question.



How old was Nicholas Flamel before he died? [✓ 556] 566 565 665

You got 4/5 correct

Fig 3.1:- Quiz Game: Result

Result is displayed in the form of a dialog box.

## Future Work

The graphics can be enhanced by using sprites and the layout can be made more user-friendly. Additional spells can be added in Dueling which have completely different functionalities. For example, a Boggart suddenly appears so that the user is compelled to stop fighting the opponent and get rid of the boggart first. This can be done using random number generator concept. Also, certain spells won't always be available for use unless the player has certain number of credits. We can have a sorting quiz as well where user answers a bunch of questions to see which house he belongs to.

## Bug report and Challenges

- The main dilemma before we even started working on the project was whether to use Sprites for making the Dueling game or simply work with Graphics. Since out game map is stationary, it would have inconvenient to define so many sprites then organize everything, the complexity of code would have increased tremendously for such a small task. So we decided to proceed with graphics.

- Another problem that we had encountered was setting up delay time whenever spells collided with the player or opponent. So we set up a time counter whenever there was a collision and started a loop to assign values to collision flags and time counter as per the status of the game. The concept of threads would have been more appropriate for this purpose though.

- When we ran the Dueling game alone, it focused on the JPanel correctly but as soon as we combined the Quiz and Dueling games using cardlayout, setFocus stopped working. One has to minimize the dueling window then maximize it as soon as the "Let's Duel" has been pressed so that the window is in focus. We've been unable to address the issue.

- Another ambiguity in the game is that since we have not used sprites, when we create a Protego object (essentially a wall) at a distance that is smaller than the width of the Protego object, the second Protego object overlaps the first Protego object. Both the objects perform their function correctly which is blocking any incoming spells. But one would prefer the second object to get drawn **beside** the first one and not partially **overlap** it. Using sprites will eliminate this issue as the game map would then be made of large number of tiles rather than a single image. Second way to resolve this is to define a function to check whether the second object's x and y coordinates lie within the dimensions of the first one.

## Bibliography

- Tutorial:
  - Java Game: https://www.youtube.com/watch?v=fqdgrFuFZqU&list=PLWms45O3n--4t1cUhKrqgOLeHE_sRtr0S
  - Java: https://www.youtube.com/watch?v=Hl-zzrqQoSE
  - Quiz: https://www.youtube.com/watch?v=DBLJGokC-9M&t=369s
  - CardLayout: https://www.youtube.com/watch?v=sAReaaTxNGU&t=369s

- Documentation:
  - “Head First Java” – Bert Bates and Kathy Sierra