**1. Project Statement**

“Knock the dragons” is a 2D game app. It is very simple and easy to play. It consists of two types of dragons with two different colors. The game classifieds the green dragons as friendly while the black dragons as unfriendly. When the game starts, the player will be able to click on a spear and kill the flying dragons. The rules of the game, however, prohibits the player from killing the green dragons. In fact, the user will lose 1 point for each green dragon killed. On the other hand, killing the black dragon credits the player 1 point. The player continues plying and the score is adjusted based on the black and green dragons killed. If the player’s score reaches less than 0, the game will terminate and display the highest score. This score is the highest score the player achieved from the beginning to the end of the game. The user then will have the options to restart the game or quit.

This android game is more suitable for kids. It is simple and easy to follow. Its challenging difficulty is very low. It can be played in any android device. There is no requirement to run the game. So, why do I want to develop this game app? Applying my skills and possible future opportunities are my two main reasons.

The first reason for creating this game is to apply the skills I have learned in the mobile application course. Developing the 2D game gave me the opportunity to explore many android build in tools and interact with their functionality. Creating this app also enables me to dive into android environment especially animations. In addition, it is beneficial to develop this game as it encourages for researching the necessary information to combine with the skills obtained in the course in order to complete the game.

Now day, there are many opportunities in the game development market. Building an android game is an essential reference to have in a resume. This 2D game can be used as a reference of experience with android development. It can be presented as a prove of android skills. Therefore, the second reason for building this app is to add it to my resume for any future opportunities.

**2. Application Design**

Last Layout

Main Layout

Middle Layer

The main layout is designed using the xml file. It is the first layout to be displayed when the app is started. This module contains the background image and a text explaining the rules of the game. It also has a button for the user to click in order to begin playing. When the button is clicked, a new activity is lunched using the intent object and the main activity is closed. As a result, the middle layer is displayed.

The middle layer is created at runtime using the java classes. It is designed using canvas objects by implement the intent object. In this layer, the images are placed on the bitmap objects and displayed on the screen. This module is where the user interacts with the objects. The middle layer is closed after the user’s score dropped below 0 and the last layout is displayed.

The last layout is created using the xml file. It consists of a background image, game over image, the “highest score” text, the actual highest score text (set to 0 and changes at runtime), start over button, and quit button. This layout is used to enforce the rules of the game. It is displayed as a way of terminating the game. This module is also used to give the user the opportunity to play again or quit. In addition, the first layout can be displayed again from this module. The first layout is displayed from this module as a result of clicking the “start over” button which leads to a new activity using the intent object.

**3. Application Implementation and Evaluation**

To create this game, I have implemented the following classes:

MainActivity class:

In this class, I have two methods: onCreate and Play. The onCreate method is used to start the main activity and pass the main layout that’s been designed. The Play method is used to handle the play button of the main layout. The MediaPlayer object for the background music is also created inside this method. In addition, this method is implemented to start new activity using the intent object.

ViewClass class:

In this class, I created the objects to be displayed on the screen and instantiated them on the constructor. I also overrode the onDraw and onTouchEvent methods. In the onDraw method, I implemented the canvas object by passing the bitmap objects to the drawBitmap. The onDraw method is used to display these objects dynamically. The sound effect is also implemented in this method after certain condition is achieved using the soondPool object. In addition, a new activity will start from this method through the intent to display the last layout if the user’s score dropped below 0. In the OnTouchEvent, I implemented the MotionEvent to detect if the spear object is touched. This is the method where I also keep track of the numbers of spears in the array.

Play class:

In this class, I created an object of Play class and overrode the onCreate method. This method is used to instantiate the Play object and pass it to setContentView.

Dragons class:

This class is used to create the black dragon object. In the constructor, I instantiated an array that holds the dragon images. I also set the dragon to be displayed in random position at random speed. In addition, I created inside this class the following methods: getBitmap, to get a certain image from the array. getWidth, to get the width of the dragon Image. getHeight, to get the height of the dragon image. reset, to display the dragon within a random position of the screen with random speed.

Bat class:

This class is used to create the green dragon object. In the constructor, I instantiated an array that holds the dragon images. I also set the dragon to be displayed in random position at random speed. In addition, I overrode all the methods of the Dragon class.

Spears class:

This class is used to create the spear object. In the constructor, I instantiated the spear object and set its position on the screen. I also create two methods to get the width and the height of the spear.

TheEnd class:

In this class, I have the onCreate method to create the activity for the last layout. I also have the startOver and quit methods. In the startOver method, the main layout is displayed by starting a new activity using the intent object. The quit method is used to call the finish method to end the game.

**4. References**

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**5. Experiences and Thoughts**

Developing this game was challenging. One of the challenges was calculating the coordinates to figure if the spear hits the dragons. After spending time analyzing the code, I was able to solve the issue. Another task that required me some researches was adding the sound effects as this concept was not covered in the course. I managed to add the sound to the game after researching online.

To end the game, it is necessary to set some rules for the user. This game is implemented by adding and subtracting points from the player. Implement a better way for ending the game is one of the features would possibly make this game more interesting.