SSAD Assignment 1

9 August 2015

1 Donkey Kong (100 marks)

1.1 Introduction

You have to write a python program that simulates a basic version of Donkey Kong Game with different set of rules. You are responsible for saving the princess.

It's like that your solution will have classes corresponding to the following concepts:

1. Person

2. Player

3. Donkey

4. Board

5. Fireball

where Player and Donkey inherit from Person.

You have to implement it using OOP Principles [**Inheritance, Polymorphism, Encapsulation and Modularity** are must]. Your grade will be proportional to the quality of code written.

1.2 Rules

- Symbols used for Game Elements are:

Player	P
Donkey	D
Princess	Q
Walls	X
Fireballs	O
Coins	C
Stairs	H

- **Preferred Board Size :** 30 x 80

- At the start of the game:
  - Donkey spawns on the top left floor and can move randomly left or right only on the Top Row.
  - Player starts from the bottom left floor of the Board and can move Left or Right on the Board, Up or Down on the Stairs and can Jump.
  - Princess will be in a captured Cage as shown in Figure 1.
  - At least 20 Coins should be generated randomly at the beginning of the game.
  - Board should look something like as shown in Figure 1, however you can modify it according to your wish.
  - There should be a space of 3 rows between consecutive Floors.
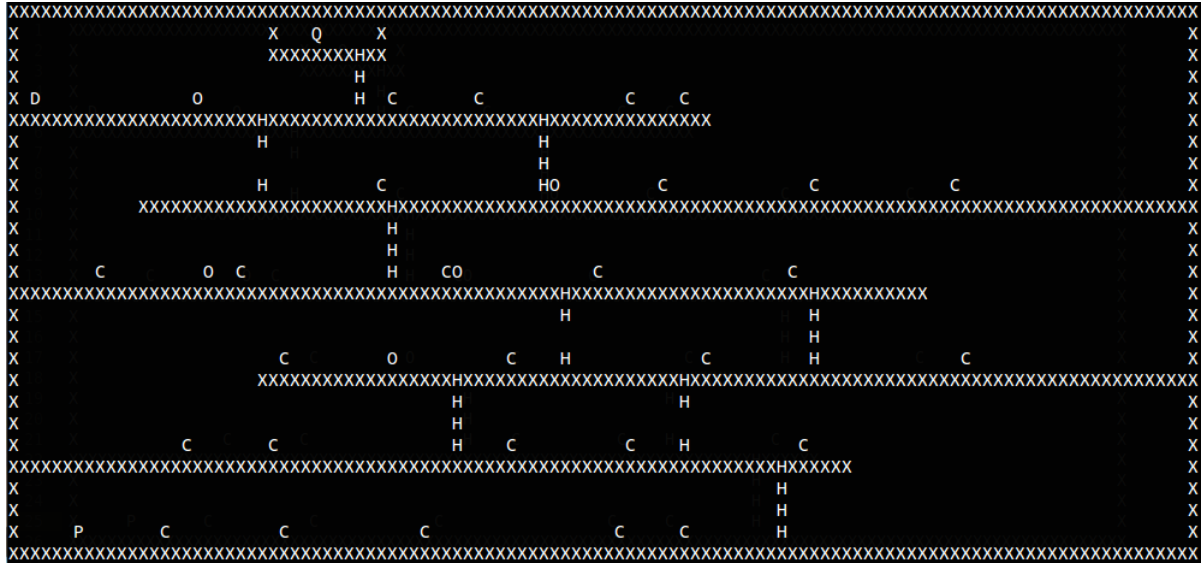 - Also Display Score at the bottom of the Game Layout.

Figure 1: Game Layout

1.2.1 Player

- Player can not climb 'Broken Stairs'.

- Player can Jump which should be depicted as following :
  1. Transition should take a total of 4 steps.
  2. 2 moves up and 2 moves down, in the pressed direction.

- Player will collect coins as it moves and will be rewarded with 5 points for each Coin.

- A player has 3 lives. Whenever hit by a fireball, the player re-spawns at the bottom left floor, looses a life and gets penalized with 25 points.
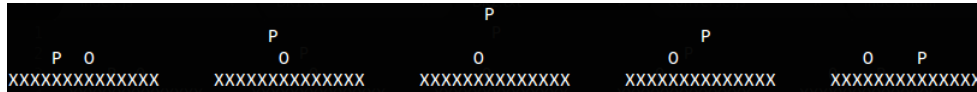
Figure 2: Jump in the right direction

- Goal of the player is to reach the princess, Level increases (your are free to innovate through Levels) and Game 'restarts' as soon as it reaches the floor of Princess and the Player is rewarded by 50 points.

1.2.2 Donkey

- Donkey will throw Fireballs.

- Fireballs can falldown from a 'Staircase' or 'End of the Floor' and will move in a particular direction, randomly chosen on a falldown.

- Fireballs eliminate at the Player Spawn Position(Bottom Left Corner).

1.3 Controls

Action	Key
Move Left	'a'
Move Right	'd'
Move Up	'w'
Move Down	's'
Jump	Space
Quit	'q'

1.4 Necessary Functions

Some functions that should be compulsorily be present in your code:

- getPosition()

- checkWall()

- checkCollision()

- collectCoin()

1.5 Important

- **End** the game when all lives are over or User quits by pressing 'q'.

- **Reload** the board, keeping the score intact when the princess is Rescued.

- **Bonus** marks would be awarded for additional features (Colored Output, Multiple Donkeys with increase in level, using Pygame, etc).

- **OOP** Principles should be strictly followed.

- **Plagiarism** will be strictly dealt with.

1.6   Evaluation Criteria

OOP-Inheritance	15 Marks
OOP-Polymorphism	15 Marks
OOP-Modularity	15 Marks
OOP-Encapsulation	15 Marks
Functionality of Game	40 Marks
Bonus	20 Marks

Upload Details

Instructions for uploading via Moodle will be given out later.