Assignment 3

By Maryam Jafar 101079492

The objective of this assignment was to create a Physics class, which can exist with a separate header file and can inherit properties from the existing classes. The point of the physics class was to have it as a separate engine that takes care of the game physics, instead of embedding the physics in the main code. With its own functions, it could also be possibly modified and applied to other projects.

Functional Requirements:

1. The game shall initialize all variables
2. The game shall load all the visual assets
3. The game shall receive keyboard input
4. The game shall move the player in the right direction according to input
5. The game shall make the player jump if space is pressed
6. The game shall calculate the distance during jump
7. The game shall calculate the time during jump
8. The game shall calculate the speed during jump
9. The game shall accelerate the player when falling
10. The game shall check if the ground level was reached
11. The game shall end falling
12. The game shall calculate distance in elevation of ground
13. The game shall make the player fall off the ground if the difference in elevation is high
14. The game shall make the player walk on the ramp instead of falling when elevation is low

Game object

* Data :
  + XY coordinates
  + Height and Width
  + V0,y0,t
  + Jump (true/false)
* Code :
  + Draw
  + Get image

Animated object

* Data:
  + Frames
* Code:
  + Advance
  + Set Frames
  + Draw

Physics

* Data :
  + Ground-level
  + Relative ground level
* Code:
  + Set ground level
    - Check if the player’s x value is less than a certain margin
    - Set ground level according to margin
    - Relative ground level is the difference between ground level and player height
  + Move
    - If difference between relative ground level and player’s y is not more than 5, allow player to move to target position
    - Otherwise the stays stationary
    - If jump is true, player’s y position value becomes value of formula for jump and fall
    - Change in Y position stops if y becomes more than relative ground level
    - If player’s y is less than relative ground level, set jump to true and y equals to y0

Game:

* Data:
  + Objects
  + Key down (true/false)
* Code:
  + Setup
    - Loads all assets
    - Sets x and y values for enemy
    - Sets key down
    - Sets frame rate
  + Update
    - Updates target value
    - Updates key values and animates
    - Updates player objects key values based on key and true/false
    - Runs physics Move code
  + Draw
    - Draws player, enemy, background image