CS 176 | Advanced Scripting
Programming Assignment 4

This assignment is focusing on forces and simple physics manager. The estimated time for completion is about ten hours.

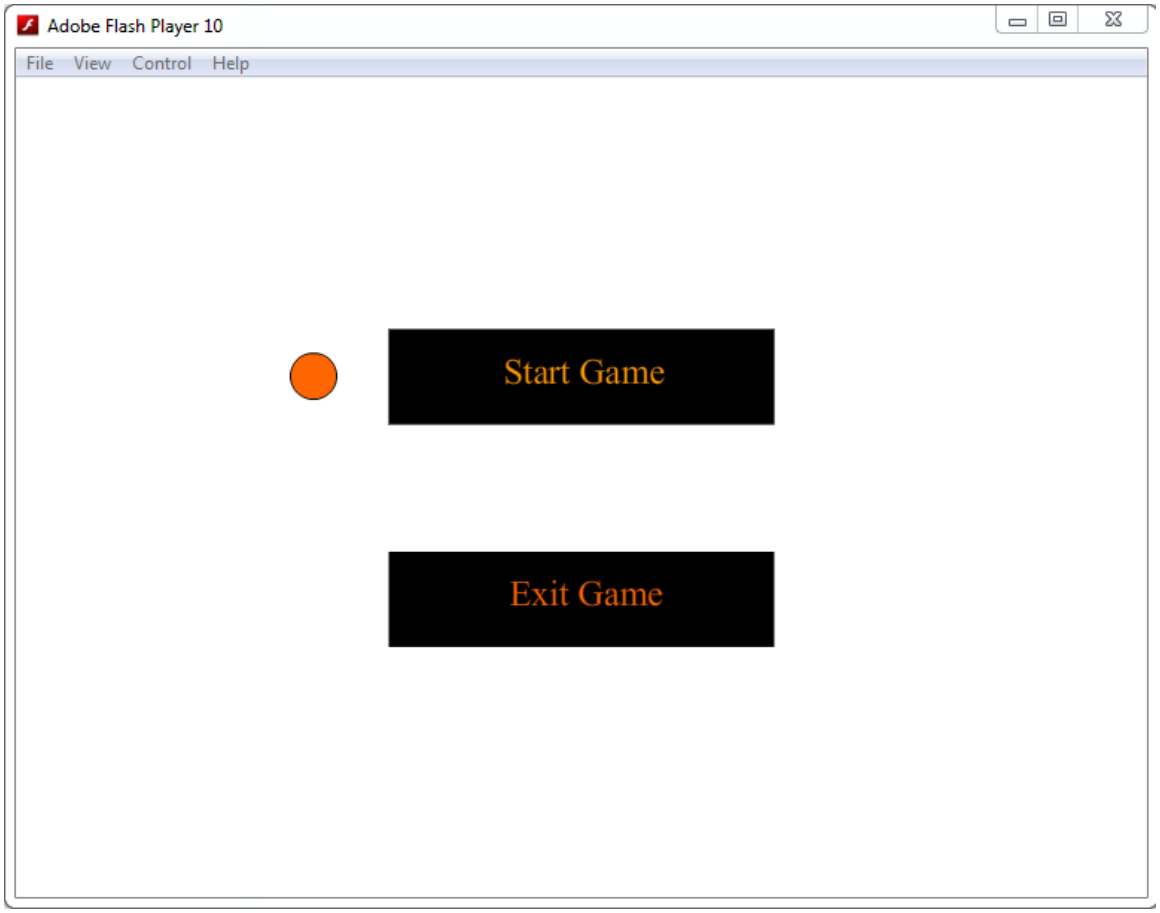
The program given to you is still based on the same engine that you made in assignment 3. You will be given all the needed assets and classes (.as files) except of some that you will have to implement/Update

- **PhysicsInfo.as**
- **PhysicManager.as**
- **GameObject.as**

Details

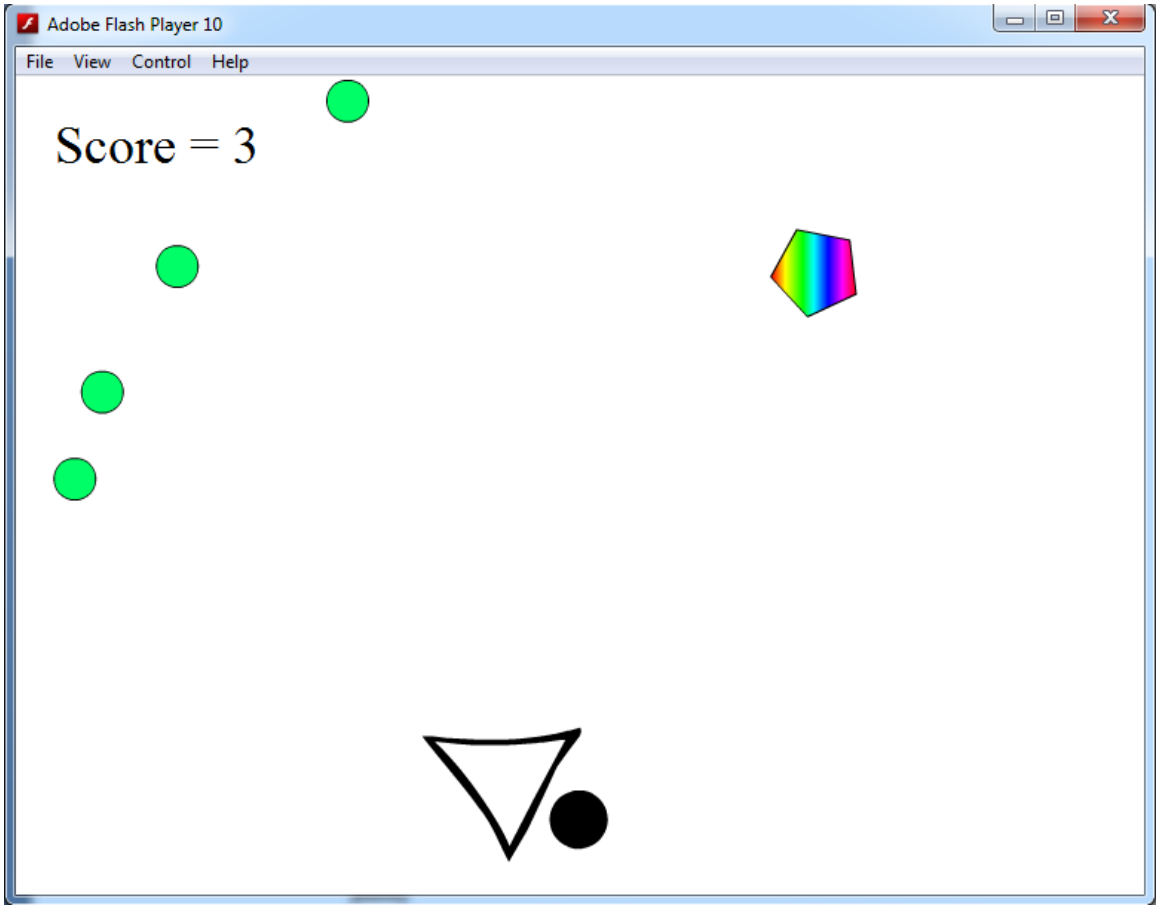
Game Logic Details:

Main Menu



- ***In the MainMenu, three MovieClips have to be shown (StartGame , ExitGame and SelectioButton)***
- ***The player uses the "UP" and "DOWN" keys in order to change the selection between the two***
- ***Pressing the "Space" bar will switch us to a different level (of course depending on the user's selection)***

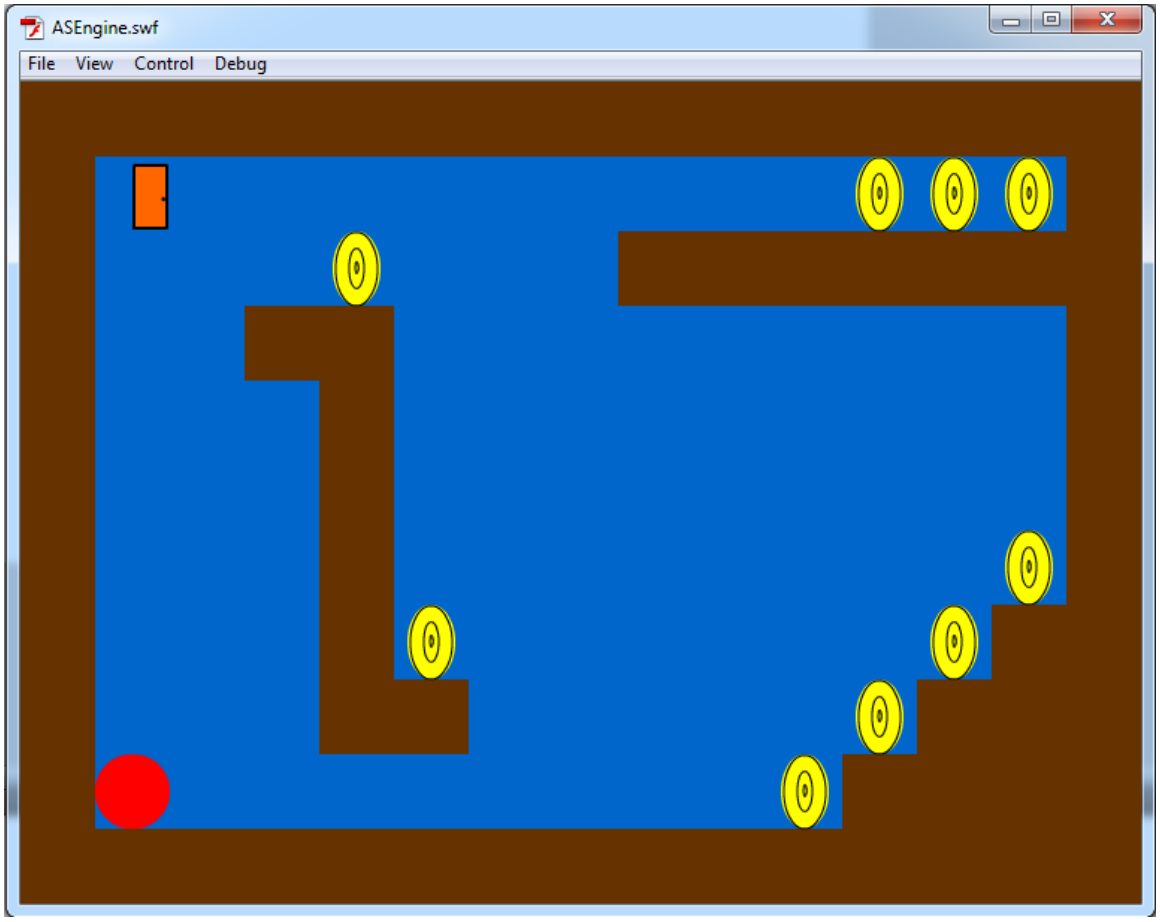
Level 1



- ***Level 1 behavior:***
  - ***Objects:***
    - ***Turret:***
      - ***Rotates with the "Left" and "Right" arrow keys***
      - ***Has a limit on rotation (-90 to 90)***
      - ***Shoots bullets in the right direction when triggering space***
    - ***Enemy:***
      - ***Is randomly generated at y = 50 every 50 frames.***
      - ***Moves towards the turret***
      - ***Has a random speed between 5 and 10***
      - ***Gets destroyed if collides with a bullet or if it goes off the screen***
      -
    - ***Bullet:***
      - ***Moves in the direction specified by the ship***
      - ***has a constant speed 5***
      - ***Gets destroyed if it collides with the enemy or goes off the screen***

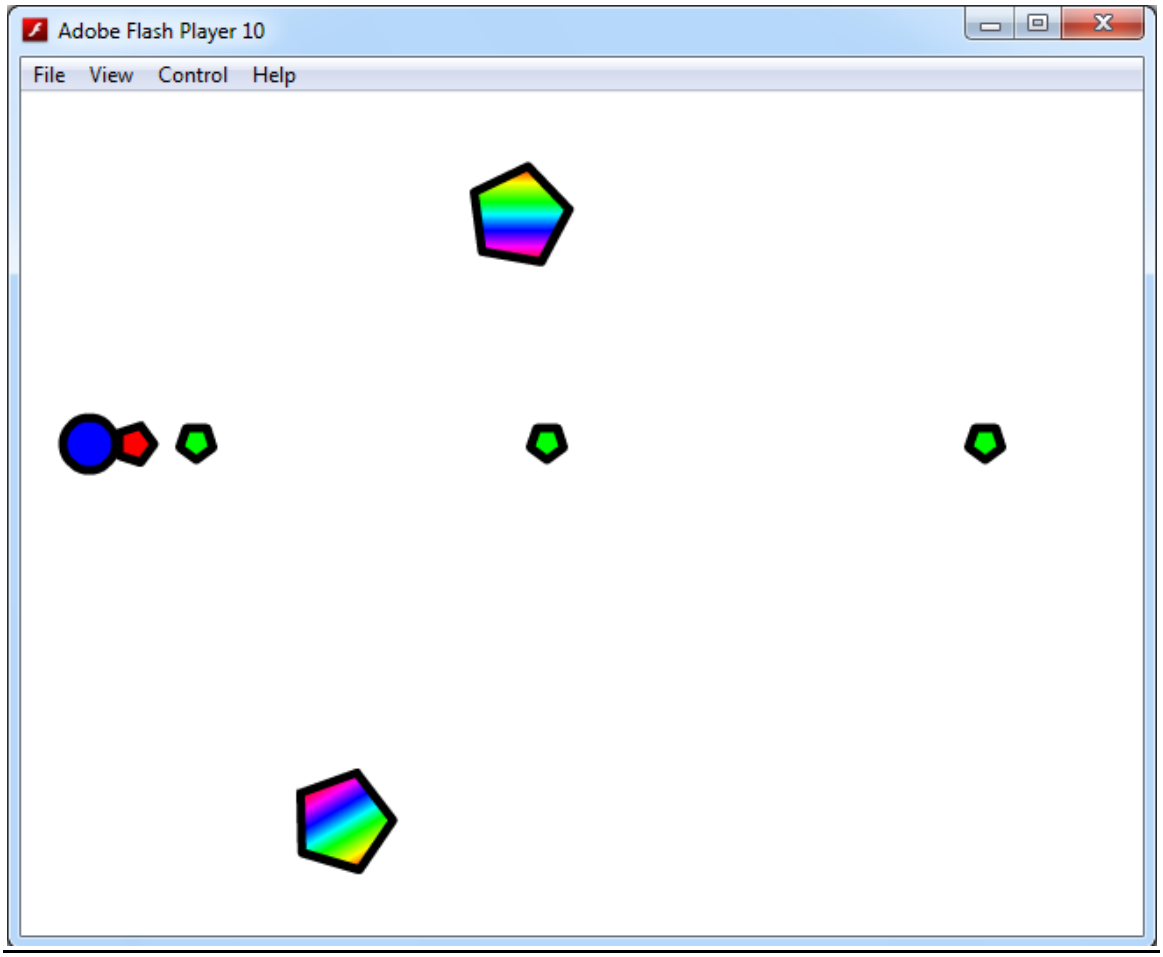
- ***Score goes up by one if bullet collides with an enemy***
- ***Game goes to MainMenu if enemy collides with the turret***
- ***Pressing "R" at any time restarts the level***
- ***Pressing "N" at any time takes us to level 2***
- ***Pressing "M" at any time takes us back to MainMenu***

Level 2



- ***Level 2 is a simple maze game***
  - ***The red circle is the player.***
    - ***Moves Up, Down, Left and Right (arrow keys)***
    - ***Collects the coins (yellow ovals)***
    - ***Collides with the maze (Brown tiles)***
  - ***Collecting all coins will open the door.***
  - ***The level ends(by going to Level3) when the player collides with the open door***
- ***Pressing the "R" key anytime during the game will restart the level***
- ***Pressing the "M" key anytime during the game will take us back to the main menu***
- ***Pressing "N" at any time takes us to level 3***

Level 3



- ***Level 3 is a simple physics based top down shooter***
  - ***The red and blue ship is the player.***
    - ***Moves forward and back according to the direction it is facing (all using forces).***
    - ***Friction is applied on it so that it slows down***
    - ***Shoots green bullets in the direction it is facing***
  - ***Multi-colored stars are falling (all physics based).***
  - ***If the green bullets hit the multi-colored stars, both will be destroyed***
- ***Pressing the "W" key anytime during the game will add a wind global force (direction x=-1 y = 0, magnitude = 25, time = Infinity).***
- ***Pressing the "Q" key anytime during the game will remove all global forces***
- ***Pressing the "M" key anytime during the game will take us back to the main menu***
- ***Pressing the "R" key anytime during the game will restart the level***

PS: Check the given swf file for more details or to play the game

Code Details:

In this assignment we will be adding a simple physics manager that allows the engine user to apply translational forces on a game object.

Even though we will be going over all the classes during the lecture, it will be up to you to revisit them when doing the assignment in order to implement the all the functions inside the ".as" files that were listed in the beginning of this document

You will be given structured classes containing all functions that you need to implement. In order to correctly implement those functions, you need to do the following:

- Read the function's description (if provided) and understand what the function does, what parameters are needed for it to work.
- Check how the function is used in the engine, because that helps you a lot in knowing what it does.

Note:

- **You are only writing code in the above listed files in the Engine folder.**
- **Level3 classes are already done for you so do not touch them. They are not commented and you don't need to comment them!**

Comments

In this and future assignments, you are required to include:

- **A file header comment in every piece of source file. The format is shown in the "Comments.as" file given to you in the beginning of the semester and should be present at the very top of all your code.**

- **Function header for each function you create. The format is shown in the "Comments.as" file given to you in the beginning of the semester and should be present at the top of every function.**

- **Inline commenting for your code.**

What to submit

You must submit the "ASEngine v4.0" folder in a single .zip file named correctly (go to the class page on moodle and you will find the assignment submit link). **Do not change the hierarchy of the files inside it. Do not submit any other files than the ones listed.**

If you've forgotten how to submit files, the details about how to submit are posted in the syllabus. Failure to follow the instructions will result in a poor score on the assignment (and possibly a zero).

Special note:

The due date/time posted is the positively latest you are allowed to submit your code. Since the assignments can easily be completed well before the deadline, you should strive to turn it in as early as possible. If you wait until the deadline, and you encounter unforeseen circumstances (like being sick, or your car breaking down, or something else), you may not have any way to submit the assignment on time. Moral: **Don't wait until the last day to do your homework.**