# Assignment 1

# Catch/Reach-Destination Game

# Deadline: Thursday 19/10 at 11:59 pm

## Description & Game Play:

➔ **General idea:**

In this assignment, you are required to implement a **2D** catch/reach-destination game. The main game idea is that there is a main character/object that starts at the middle of the screen and keeps moving forward. This is done by moving the background while the object stays in place. This character/object tries to catch another object at the end or reaches a destination (The object or destination appears at the right of the screen). The character/object can move upwards or downwards along the path while avoiding the obstacles and taking in power ups.

➔ **Obstacles:**

Throughout the character's/object's motion, other objects/characters moves in the opposite direction towards it. The main character/object should avoid the opposite objects by moving up or down. If it happens that the main character/object collides with one of the coming objects, it should be moved one step back. Since we are starting from the middle of the screen, the object can collide up to two times while moving backward each time. In the third time, the main character/object loses.

➔ **Power ups:**

Similar to the idea of the obstacles, there are power ups, which push the main character/ object one step forward. The character moves two steps forward then in the third times catches/reaches its destination. The power ups move similar to the obstacles and appear at random times with a rate less than that of the obstacles by a ratio 1:6 (A minimum of 1 power up and 6 obstacles in 1 minute or less time). The main character/ object tries to catch the power ups.

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## Theme:

You are required to choose a theme for the assignment. For example:

1) Harry Potter: The main character can be a Quidditch player trying to catch the golden snitch at the end. Obstacles can be bludgers or Quidditch players from the other team.
2) Star Wars: A space ship trying to reach a certain planet while the obstacles are meteoroids.

All ideas are encouraged as long as the theme is consistent.

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## Modeling:

1) The main character/object should be implemented as a minimum of 3 different primitive TYPES and a total of minimum 9 primitives.
2) At least 2 scenes should be implemented in the background. Continuous alternation of scenes is required as the character moves to give the impression that the character is moving from one scene to the next.
3) At least 3 different obstacles should be implemented or 3 alterations of the same object.
4) At least one power up.

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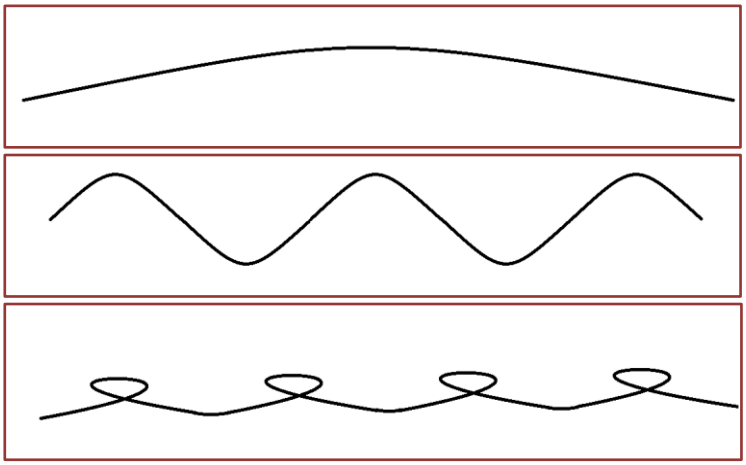
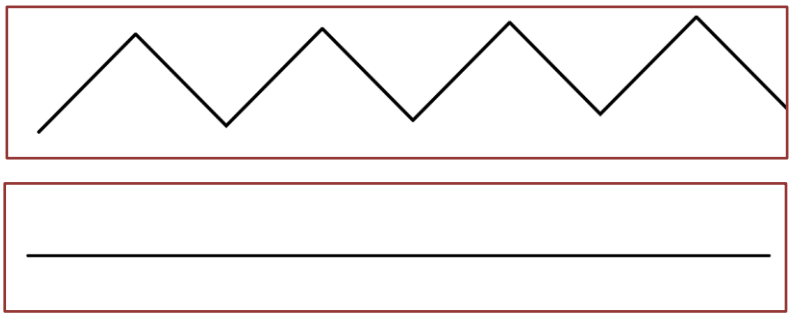
## Animation:

1) The animation of the obstacles and power ups should be done by means of Bezier curves (Attached: "bezier.cpp" file). Each obstacle and power up should have a different motion. Obstacles and power ups move appear from the right side of the screen until they reach the left side then disappear.

   These are examples for different types of motion that can be done by means of Bezier curves.



   These are examples for different types of motion that can be done WITHOUT using Bezier curves:



   Other motions are possible as long as they are not trivial.

2) While moving up and down, the main character/object must follow a smooth motion path.

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**Bonus:**

1) Complex modeling.
2) Sound for every action in the game. For example, a sound when the character/object takes a power up. Another sound when it hits an obstacle, etc.
3) Dynamic Background.

Other ideas are encouraged as long as they are original ☺

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**Submission Guidelines:**

1) The assignment should be implemented in OpenGL
2) This is an **INDIVIDUAL** assignment. Cheating cases will lead to a ZERO. Also, copying the code from the internet will lead to a ZERO.
3) This assignment is worth 7.5 %
4) Deadline for the assignment: Thursday 19/10 at 11:59 pm

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