**The American University in Cairo**
**Computer Science and Engineering Department**

# CSCE 1101 Programming Fundamentals
# Fall 2018 Project – Frogger Game

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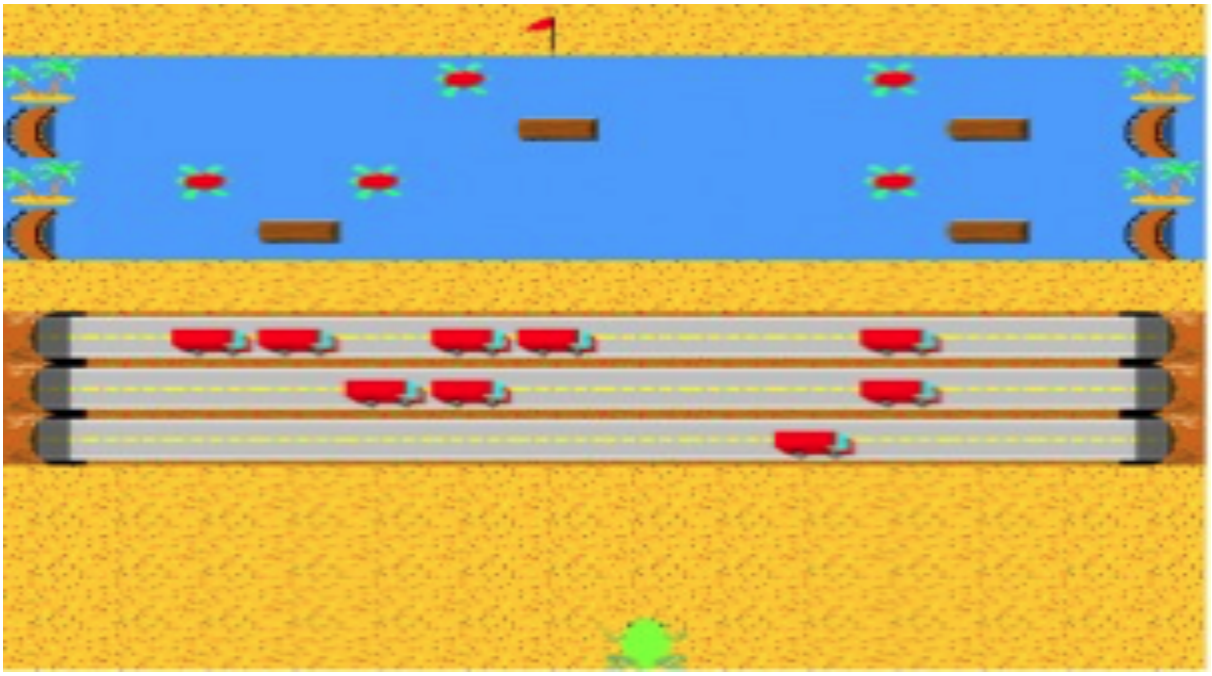
## 1. BACKGROUND:



**Basic Requirements:**

There should also be a main menu with at least 4 buttons:

- **Start** (This will open the game window and enable the user to play)
- **Highscores** (This will show the maximum 5 high scores in the game overall)
- **Options** (This will show options window, it should at least have one option to enable/disable sounds)
- **Exit** (Close the window)

The main game is composed of one window where the frog starts at the bottom of the screen and tries to cross the road with vehicles that are speeding along it horizontally and a river with logs and turtles, all moving horizontally across the screen in different directions (example: logs move right and turtles move left).

The objective of this game is to help the frog move safely through the obstacles to the destination (top of the screen). The frog has 3 lives and it loses a life whenever it hits a vehicle, jumps into the water, or goes out of the window with a log or a turtle. The frog always spawns back from the starting position at the bottom of the screen.

The player will navigate the frog in the 4 directions using the arrow keys or WASD or both; each click causes the frog to hop once in that direction. If the player loses all his lives, the game should show "**Game Over**" screen for 5 seconds, then go back to the menu. If the player wins, the game should **show the score** for 5 seconds, save it in the high scores list if applicable and go back to the menu.

**Possible Bonuses:**

- Pickups.
- Animations.
- Different themes.
- Save/Load the game.
- More obstacles, levels and settings.

These are just some examples, use your creativity.

## 2. REQUIREMENTS:

You are required to submit the full project composed of the following:

1) A running C++ code that delivers the required functionalities using **an object-oriented implementation (i.e. use classes)**
2) In order to display 2D graphics elements and images, you will need to use an external graphics library: SFML.

## 3. MILESTONES:

1) Saturday 17th of November: **Initial Project Design Documentation**
    a) Basic structure of your project
    b) List of the classes and the functions you intend to use

2) Saturday 1st of December: **Main Design**
    a) Moving objects (obstacles, and frog)
    b) Win or lose output

3) Saturday 8th of December: **Final Project**
    a) A menu to start/exit the game, show high scores and enable/disable sound.
    b) The final code and the resources (pictures, audio files, fonts, etc).

4) Sunday 9th & Monday 10th of December: **Demo and Presentation**
    a) Demo of your code with the graduate TAs
    b) Presentation with a video or live game play in class

## 4. GUIDELINES:

- You should work with your approved group on this project, only one member of the group should submit the work to blackboard on behalf of the group.
- Although this is a group project, **grading will be on an individual basis**. Every student should participate in the project work and show his/her contribution to the project at the time of the presentation.
- Your code should be **modular** and **object oriented**.
- Please make your code readable.
    - Choose short and descriptive variable and function names.
    - Document your code by using comments whenever needed.
- **Kindly note that any detection of copyright violation, plagiarism or cheating will result in the cancellation of the project to the whole group and a F is earned in the total course grade.**
- In order to create the needed images, you can use any 2D graphics drawing programs such as **GIMP** or **Adobe Photoshop**. You can also outsource images but make sure you include the sources in your documentation. Check with any of the TAs to help you find the appropriate tiles for your game.

## 5. HELPFUL LINKS:

- http://www.happyhopper.org
- https://en.wikipedia.org/wiki/Frogger
- https://www.sfml-dev.org/documentation/2.5.1/