

# CSC1011: Fundamentals of Programming

## Main Assignment (2014-15)

### Overall Module Assessment

There are two assessed elements in this module:

- |          |                                     |   |
|----------|-------------------------------------|---|
| <b>1</b> | <b>Practical Examinations (60%)</b> | First semester practical exam (30%)<br>Second semester practical exam (30%) |
| <b>2</b> | <b>Main Assignment (40%)</b>        | Individual submission, presented as part of a group                         |

**In order to pass the module, you must achieve a 40% pass overall.**

### Main Assignment

#### Brief for the Game

For this assignment you are required to design and implement a Trump Card superhero/villain game (i.e. a virtual hero/villain). You should design a Character class from which the Hero and Villain classes will inherit. Each individual hero/villain should have three states: status, (hero/villain) actions and energy.

The game should prompt the user at random times with an opportunity to fight /commit crime depending on your status. When the player is prompted, it should tell them how much energy this will use up and how much it will raise their action bar. The player must have enough energy to complete the action (if they wish to accept). If they wish to ignore, the game should tell the user by how much their action status bar will decrease.

If the hero / villain does not have enough energy they must ignore the crime and cannot be given the opportunity to accept it. Once the energy bar falls below a pre-defined state, in this case zero, the player loses their abilities, will become human and the game will end. The hero/villain should also be able to sleep at any point of their choosing. Crimes can happen when the player is asleep. The player should be able to wake up if they have enough energy to complete the action, otherwise they must ignore it. If a hero/ villain continually ignores a crime they will change into either a hero/villain/human.

The implementation of the game **must** be your own original work. You may **not** include any code taken directly or indirectly from another source, even if this includes major changes and is fully attributed. Any such code will not be awarded marks. You **may** include graphics, sound and other elements from other sources if these are acknowledged in your assignment. You will give a demo of your game during week 12.

**Basic Game Requirements (Pass Criteria)**

The game must include the following:

- Two classes (Villain & Hero) that inherit from the base class (Character)
- A hero / villain image on screen along with progress bars for each of the three states:
  - Status (indicate to the player if they are a villain / hero / human/ sleep)
  - Hero / Villain Actions
  - Energy
- The player should be able fight/ignore crime with the hero (increasing/decreasing the Hero Actions state). This should be represented as a button that the user can click.
- The player should be able to commit/ignore crime with the villain (increasing/decreasing the Villain Actions state). This should be represented as a button that the user can click.
- The player should be able to disguise the villain/hero to allow them to sleep (increasing the Energy state).
- Once the Hero/Villain energy reaches zero the game should end.

For additional credit, the game may include the following:

- Pre-defined images, which change depending on the energy level and state of the hero/villain/human.
- The ability to name your villain/hero and include music / sounds.
- Provide a hero/villain world for the character to operate in.
- When the game ends, the player should turn into a human.
- Menu system and, depending on whether or not the player has chosen a villain/hero, the colour of the user interface must change to reflect the user's choice.
- When the game is over the image changes from a hero/villain to a human image.
- If the energy/hero villain actions are between 90 - 100% the hero should reach "superhero status"
- If the energy/ hero villain actions are between 25 - 35% the villain should reach "super villain status".
- The player should also have the ability to save and load the game.
- Once energy falls below a pre-determined state the hero/villain must ignore the crime and sleep.
- The player should be able to fight crimes at random times (generated by the system) and react to these within 10 seconds. Crimes can happen when a player is asleep.
- If the hero/villain continually ignores a crime they will turn into a villain/hero.
- Include hero/villain properties, which will affect the energy of the hero/villain.
- Create a game world for the hero/villain to live in.
- Ability to wake-up from sleep and fight/commit a crime but only if they have enough energy. The status bar should be highlighted red/green depending on whether the player is a hero or a villain.
- The status bar should be highlighted red/green depending on whether the player is a hero or a villain.
- You should be creative and add features not discussed in this assignment specification.

At each level, additional marks are available for:

- A well-designed user interface
- Overall program structure, code style and readability
- Program execution, correctness and completeness
- Creative design for the interface & functionality

## Implementation Details

1. You must implement in java all classes associated with this assignment specification (e.g. character, world, UI, menu, villain, hero etc.).
2. There must be at least two classes (Hero.java & Villain.java) implemented in java that inherit from the base class (Character.java).
3. You must implement the game interface to include all the standard components such as status bars, images, sounds and buttons.
4. You should implement an overall introductory interface for the game. When a player first uses the game they should be given the option of initially choosing whether their chosen character is a Hero or a Villain. The colour of the image should change accordingly.

## Submission Details

The completed game should be saved in a zip file and uploaded to the assignment location in the CSC1011 module of Queen's Online (by the deadline provided). Only one submission per person is required. The components are as follows:

You are required to submit one copy of the completed game by **5pm on Friday 8<sup>th</sup> May 2015**. This should be properly labelled with your name and should include **at least** the following files:

- i. Character.java
- ii. Hero.java & Hero\_Tester.java
- iii. Villain.java & Villain\_Tester.java
- iv. TrumpGame\_Tester.java

**Note:** Please check that you have included the original development Java (.java) files.

These submissions will be date-stamped and, in accordance with University regulations, late submissions will be penalised.