This document describes the **team work assignment** for Telerik Academy students studying Object-Oriented Programming (OOP) – February 2014.

# Project Description

Design and implement **an object-oriented Role Playing Game** by choice. Here are some suggestions:

* The world can be **fantasy**, **sci-fi**, **modern**, etc.
  + our Ninja lives in modern world
* You may have one or more **heroes**, gaining **experience**, having **skills**, wearing **items**, etc.
  + Our Ninja will gain Knowledge, Strength and will have skill attacks and use items
* You may have one or more **players**, fighting against a computer or against each other
  + Our Ninja and his party will fight against the computer
* You may have **enemies** like creatures, machines, warriors, etc.
  + Our Ninja will fight against Jedi, Assassins and Robots. Some of them are clever, some of them are strong, and others are balanced.
* You may have **items** like swords, guns, armor, space-suits, etc.
  + Our Ninja will have Energy items like food and drinks that he can use to restore his energy during the battle
  + Our Ninja will have Personal Goods like furniture, clothes and etc. that will affect his total Energy and Defense.
  + Our Ninja will have Special Attacks items for single use, which he can buy and use in the battles.
* You may have **skills** like double-damage, teleportation, etc.
  + Our Ninja will have “Powers” that will use in battles. There will be “Knowledge” type of power that he will earn in the Academy and “Martial Art” type of powers that he will earn in the Gym.

## General Requirements

Please define and implement the following object-oriented assets in your project:

* At least **5 interfaces** (with one or more implementations)
* At least **15 classes** (implementing the application logic)
  + (abstract) Creatures
    - (abstract) Evil
      * Assassin
      * Jedi
      * RoBot
      * EvilParty
    - (abstract) Friendly
      * Ninja
      * Geisha
      * Samurai
      * NinjaParty
  + (abstract) Powers
    - Energizers
    - Knowledge
    - MartialArt
    - PersonalGoods
    - SpecialAttacs
  + (abstract) Buildings
    - Academy
    - Cinema
    - DreamJob
    - FastFood
    - Gym
    - Home
    - JobAgency
    - Mall
* At least **3 abstract class** (with inheritors)
  + Creatures
  + Evil : Creatures
  + Friendly : Creatures
  + Powers
  + Buildings
* At least **1 exception class** (with usage in your code)
* At least **3 levels of depth in inheritance**
  + Assassin : Evil : Creatures
  + Jedi : Evil : Creatures
  + RoBot : Evil : Creatures
  + Ninja : Friendly : Creatures
  + Geisha : Friendly : Creatures
  + Samurai : Friendly : Creatures
* At least **1 polymorphism** usage
* At least **1 structure**
* At least **1 enumeration**
  + *Use enumeration is good for the Attacks is possible by giving them power coefficient*
* At least **1 event** (with subscribers)
  + *GUI uses events, but could be added more.*
* At least **1 design pattern** (e.g. Composite, Singleton, Factory, Wrapper, Bridge, Command, Iterator, …)
  + *Use of Memento design pattern for SAVE/LOAD game.*

You might read about design patterns in [Wikipedia](http://en.wikipedia.org/wiki/Software_design_pattern), [Sourcemaking](http://sourcemaking.com/design_patterns), [DoFactory](http://www.dofactory.com/Patterns/Patterns.aspx) and others.

## Additional Requirements

* Follow the **best practices for OO design**: use data encapsulation, use exception handling properly, use delegates and events like it is recommended in MSDN, use inheritance, abstraction and polymorphism properly, follow the principles of strong cohesion and loose coupling.
* Obligatory use **Git** to keep your source code and for team collaboration (you might use <https://github.com/>). TFS or SVN are **not** allowed. Use Git.
* Provide a **class diagram** (to visualize all types).
  + *What is this?*

## Optional Requirements

If you have a chance, time and a suitable situation, you might add some of the following to your project:

* **Static members** (fields, properties, constructor, etc.)
* **Constants, generic types, indexers, operators**
  + EvilParty – Generic List of 3 objects using constrains *and indexers*
  + Ninja Party – Generic List of 3 objects using constrains *and indexers*
  + *Items could use operator overload when you add item*
* **Lambda expressions** and **LINQ**
* Implementation of **IEnumerable<T>**, **ICloneable**, **ToString()** override
  + *ToString() Override for Save, Load File*
* **Namespaces** (if your classes are too much)
  + Creatures
  + Creatures.EvilCreatures
  + Creatures.FriendlyCreatures
  + Powers
  + WorldMap
* **User interface (UI)** – console, graphical, web or mobile
  + *Windows Forms or WPF*

## Non-Required Work

* **Completely finished project** is not obligatory required. It will not be a big problem if your project is not completely finished or is not working greatly. This team work project is for educational purpose. Its main purpose it to experience **object-oriented modeling** and **OOP** in a real-world project and to get some experience in **team working** and team collaboration with Git.

## Deliverables

Put the following in a **ZIP archive** and submit it (each team member submits the same file):

* The complete **source code**.
* Brief **documentation** of your project (2-3 pages). It should provide the following information (in brief):
  + Team name and list of team members
  + Project purpose – what problem do you solve?
  + Class diagram of your types
  + The URL of your Git repository
  + Any other information (optionally)
* Optionally provide a **PowerPoint presentation** designed for the project defense.

## Public Project Defense

Each team will have to deliver a **public defense** of its work in from of the other students and trainers. You will have **only 10 minutes** for the following:

* **Demonstrate** the application (very shortly).
* Show the **class diagram** (just a glance).
* Show the **source code** in the **Git** web-based source code browser.
* Show the **commits logs** to confirm those team members who have contributed.
* Optionally you might prepare a PowerPoint presentation (3-4 slides).

Please be **strict in timing**! Be **well prepared** for presenting maximum of your work for minimum time. Bring your own laptop. Test it preliminary with the multimedia projector. Open the project assets beforehand to save time. You have **10 minutes**, no more.

## Give Feedback about Your Teammates

You will be invited to **provide feedback** about all your teammates, their attitude to this project, their technical skills, their team working skills, their contribution to the project, etc. The feedback is important part of the project evaluation so **take it seriously** and be honest.