

**Task I** -Draw a class diagram for the following requirements (34 pts)

Dread Pirate Roberts is slowly preparing (along with his pirates) to retire. To ensure everyone's safe future, he decided to invest the robbed wealth. Of course, he needs an IT system to track all the investments.

1.Wealth is secured by Roberts in three different ways: hidden as Treasure, put away in a bank on a Savings Account and Investments in Companies (simply known as Investments) operating in the Caribbean. For each type of Wealth, we want to store it's value in PirateCoins, the minimum value is 100 PirateCoins (although it may change in the future).

2.In the case of Treasure, we want to store the number of chests in which said treasure is stored and a list (it may be empty) of valuable items being a part of said Treasure. In the case of Investments, we want to know the company name and its profit in each of the last 5 years (if we don't have data for the last 5 years, we store data for the period that we have).

3.Each form of Wealth is stored on one of the Caribbean Islands – we want to store the Island's name, area, geographic location and – optionally – additional description. A specific island may be used to Wealth of total value of nomore than 10% (this value may change in the future) of all total Wealth.

4.Each Investment will be overseen by a Pirate Crew (a Pirate Crew may oversee many Investments). We store each Pirate Crew's name (e.g. "Wilson's Managers") and sum of salaries of all Pirates in that Pirate Crew.

5.Pirates are described with name, nickname, salary (used as "pension" of said Pirate) and current status ("working","on vacation","on sick leave"). Each Pirate has a specific job in the Pirate Crew, jobs are unique within a Pirate Crew. Each Pirate Crew has at least 2 Pirates, a Pirate can be a part of many Pirate Crews.

6.Pirates are divided (depending on their function) into Managers (described by a list of completed management courses) and Enforcers (we remember the number of duels they won). Roberts understands the idea of career progression and allows Pirates to change the function they currently have. Besides normal salaries Pirates receive also monthly bonuses – the way a bonus is calculated depends on the function of the Pirate.

7.As Treasures are hidden in places that are difficult to find, Roberts makes Maps (each Map leads to a single Treasure). There will be 3 to 5 Maps leading to a Treasure, only one of those will be true (we store info, which one). Each Map will contain a graphic showing the way to the Treasure and will be given to one of Pirates for safekeeping. We store information, which Map is kept by which Pirate, together with start and end dates of the period when that Pirate was keeping the map. This information will be stored for 2 years after the Pirate stopped safekeeping the Map.

8.Dread Pirate Roberts wants the system to provide the following functionalities:

a.Calculate Pirates monthly bonus (used by Pirate Crew's Leader and Pirate)

b.Calculate the sum of salaries and bonuses of Pirates from a specific Pirate Crew (used by the Pirate Crew's Leader)

c.Find 10 most valuable treasures (used by Retirement Fund Manager)

d.Find 10 Pirate Crews with highest sum of salaries and bonuses (used by Retirement Fund Manager)

e.Plan hiding a treasure (it requires entering information about the Treasure, Maps and optionally assign Maps to specific Pirates for safekeeping) (used by Retirement Fund Manager)

**Task III – draw the following diagrams**

1.A use case diagram for the described system (5 pts.)

2.An activity diagram for the use casePlan hiding a treasure (5 pts)

3.A statechart diagram for Pirate based on his status (5 pts)

