HOMEWORK 2. OO SYSTEM DESIGN

Homework 2. is a group project and can't be accomplished individually.

Homework 1 is devoted to Design phase of SDLC, particularly:

1. Classes and Methods Design
2. Data Management Layer
3. User Interface Layer
4. Physical Architecture Layer

All these steps must be applied to the system that was assigned to your team earlier. This phase is continuation of work done in the framework of the Homework 1.

1. Preparation for Design Phase:

Implement V&V: Internal consistency and External consistency

- Functional Model V&V
- Structural Model V&V
- Behavioral Model V&V

While moving from Analysis Model to Design Model (phase) which of following elements of Design Model you implemented (if any of them is not applied, explain why)?

- Factoring
- Partitioning
- Layers

2. Classes and Methods Design

All classes of the system included during Analysis Phase of SDLC should be designed and partially implemented using particular Object-Oriented Programming Language that is intended to be used to development of the system. All classes with their attributes and methods should be designed in accordance to the Class Diagram. The Class Diagram at the Design Phase may be slightly different (thanks to V&V) from initial Class Diagram that was at the end Analysis Phase. All Object-Oriented concepts must be implemented and clearly seeing in design of classes. As an output of this stage you have to have number of files (let say Java files) equal to number of classes in Class Diagram (file per class). Example:

WebPage.java

```
public class WebPage {
    String url;

    public WebPage(String u) {
        this.url = u;
    }

    public void setURL(String u){
        this.url = u;
    }
    public String getURL(){
        return this.url;
    }
}
```

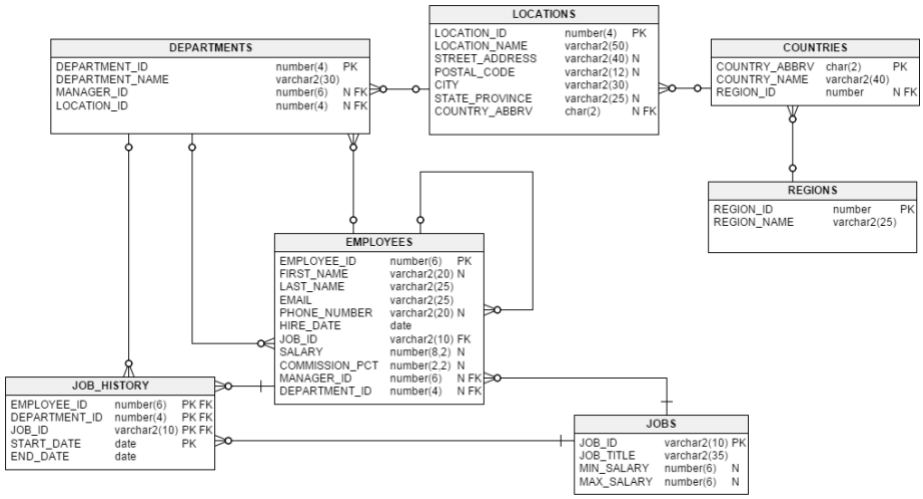
Repository.java

```
public class Repository {
    private String login;
    private String password;

    File dir;
    FileWriter fstream;
    BufferedWriter out;

    public void storeContent(Document doc) {
        try {
               ...
        } catch (IOException e) {
            e.printStackTrace();
        }

    }
}
```

If number of implemented classes (files) is different from Class Diagram, you should explain which of them are not implemented and why. At this stage classes maybe incomplete without real implementation of methods having just signatures and partial implementation (or no implementation).

3. Data Management Layer

Entity Relation Diagram (ERD) – ERD is in some level similar to Class Diagram, but it doesn't include methods. ERD diagram reflects real Data Model (Structure of Database) or Data Management Layer of the system. Example:



4. User Interface Layer

Prepare the prototype of User Interface taking into account principles below. You are expected to provide at least 3 different UIs for different modules or sub-modules of the system under development. To create the prototype of UIs, you can use any IDE with GUI library of visual components, web user interface (WUI) or just graphical editor.

- Layout
- Content Awareness
- Aesthetics
- User Experience
- Consistency
- Minimal User Effort

5. Physical Architecture Layer

Describe how the system will function architecturally: 1-tier architecture, 3-tier architecture (Client-Server), 3-tier architecture (SOA, CORBA), etc.
Type of environment the system will work in: desktop, web app, mobile app.
Which platform the system is designed for: Windows, Linux, Mac, Android (mod), IOS (mob).
What kind of hardware and software the system will use.
Additionally, draw the Deployment Diagram of the system.

Important Recommendations: While working for this homework you are expected to work intensively with Internet resources collecting more information about similar software projects. Also, carefully review Part III (Design Modeling) of primary book and Section III. Application (Chapters 8-12) of the (2nd recommended) book Object-Oriented Analysis and Design with Applications, 3rd Edition, Grady Booch.

Deliverables: The result is expected to be submitted through Blackboard as a single PDF Document that includes all sections of assignment (document must include all of five mentioned sections). As a cover page use "***cover-page.docx***" document available in course content. Number of files with code in preferred language same with number of classes should be submitted as a single .ZIP file as well.

Deadline for submission: Sunday, 06th May, 2019 at 23:59 through Blackboard

Evaluation: Your work will be evaluated based on:

1. Completeness, relevance and accuracy of document
2. Appropriateness of classes to main services of the system and to Class Diagram
3. Correspondence of all between Analysis and Design phases
4. Overall quality of System Design

Wishing you success,
Dr. Abzetdin Adamov