** COMSATS University Islamabad, Lahore Campus**

***Lab 9***

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| Course Title: | Object Oriented Software Engineering | | | | Course Code: | CSC 304 | Credit Hours: | | 3(2,1) |
| Course Instructor IndhsdjsIInstructorInstructor/s: | Yella Mehroze | | | | Theory/Lab Name: | Lab | | | |
| Semester: | 4th | Batch: | Fa19-BSE | Section: | A , B | Semester | | Spring 2021 | |

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Section -B

**Outline**

**Learning Outcomes**

* **Differentiation between reusable and non-reusable things**
* **Development of a frequenrflier framework**
  + **Identification of slots**
  + **Identification of developers need/choice to add additional functionalities [Hooks]**
  + **Identification of scenarios to use different types of frameworks**
    - **Applying vertical framework**
    - **Applying Horizontal Framework**

**[Write your solutions in this document]**

# **Task 1**

# **Q:1**

Search the Internet in order to build a list of sources of information about the following things which can be reused during software development. Rate each source on a scale from low to high, where low means the source is very uninformative (perhaps just offering to sell a product), and high means it provides a wealth of practical information.

1. Wisdom and experience about software design (e.g. tips, guidelines etc.).

**Wisdom and experience of software design is reusable.**

**High on scale**

1. Written descriptions of standard algorithms.

**Written description of standard algorithms are very useful for designing and alternating the functionality of related codes/algorithms.**

**High on scale**

1. Class libraries.

**Class libraries play vital important role in Object oriented paradigm. They provide, by and large, the most commonly reused components in object-oriented environments.**

**High on Scale**

1. Code repositories.

**A code repository are patches of source code. Codes stored in code repositories can be retrieved in future.**

**High on scale**

1. Fourth-generation languages.

**These languages consists of statements that are relation to human languages. Fourth-generation languages can be reused by in any related program by saving the time.**

**High on scale**

1. Macro packages you can add to spreadsheet or word processor programs.

**Macro packages defines the placement of code lines.**

**Low on scale**

1. Frameworks.

Frameworks lack classes and functions. Frameworks could be very useful

(h) Scripting languages used to glue together COTS programs.

# **Q:2**

Pick a couple of the best sources of information from the last exercise and discuss how they can help you achieve the reuse objective.

1. **Frameworks.**

Frameworks lack classes and functions. Frameworks are the generalized solution of generic problem.

We can access framework of relevant code to save time.

**(b) Class libraries.**

Class libraries play vital important role in Object oriented paradigm. They provide, by and large, the most commonly reused components in object-oriented environments.

# **Task 2**

**Q: 1:** Imagine you are designing a framework for the following classes of applications. Describe what services you might put in the framework. Answer this question using a simple list of things the system should be capable of doing.

(a) A *reservation* framework. This could be expanded into an application to reserve anything that needs reserving, e.g. dental appointments, meetings, tickets at the theater, etc.

(b) A *scheduling* framework. This could be expanded for scheduling meetings, trains, classes etc.

(c) A *language-processing* framework. This could be expanded to process a programming language, a database query language or a command language.

(d) An *editing* framework. This could be expanded to allow editing of text, spreadsheets, and elements of different kinds of diagrams. Think about common features of editing tools provide.

**Q: 2** for each of the three frameworks in the last exercise, what differentiating features would software developers need to provide to build specific applications? What hooks and slots should therefore be available?

**Answer**

1. **Reservation Framework**

* Booking
* Cancel Booking
* View Booking

**Hooks**

* user will get their reservation details on email
* user will be notified about any new promotions .

1. **A scheduling framework**

* Scheduling
* Updating Schedule
* Time
* Viewing Schedule

**Hooks**

* the user will get notified about their schedule .

1. **A Language-Processing Framework**

* Converting Language
* Syntax Analysis

**Hooks**

* The user will get the syntax error in the form of underlines.

1. **A Editing Framework**

* Edit Text
* Searching
* Insertion
* Save
* View

**Hooks**

* It will provides you different fonts.
* It will suggest you synonyms.

**Q:3** List as many types of applications as you can think of that might benefit from the development of the frameworks in Exercise Q:1 so as to reduce the work required to develop similar applications from scratch.

**Answer**

1. **Train Berth(Seat) Booking System**
2. **Class Scheduling System/LMS**
3. **Auto Correcter**
4. **MS Word/Excel**

**Q:4** Imagine an airline company asks you to develop the software for its frequentflier program. You choose to attack the development of this system by first developing a framework. You consider two approaches:

(a) Developing and then adapting a *vertical* framework that provides the facilities needed by several types of frequent-flier programs.

(b) Developing and then adapting a more *horizontal* framework that encompasses any frequent-buyer program such as a hotel priority club, a book club or a video rental store membership club.

For each of these two approaches, sketch the resulting framework in terms of:

1. the services it would have to offer,
2. the slots that should be present,
3. the hooks that would be useful.

Prepare arguments for both sides of the following debate question: ‘Resolved: when asked to develop a new frequent-flier system, developing a new frequentflier framework would be a waste of time.’

**Answer**

**“Frequentflier Framework”**

**DEVELOPMENT OF VERTICAL FRAMEOWORK**

* ***Services :***
* ***Special Assistance to Gold Members.***
* ***Collect Points for purchasing tickets that can be used to redeem various offers.***
* ***Offer various memberships to eliminate a certain number of flights.***
* ***Provide ticket upgrades at the top level by redeeming points.***
* ***Slots :***
* ***Staying points***
* ***Ticket Info.***
* ***Passenger Info.***
* ***Hooks:***
* ***24/7 availability.***
* ***Notified promotions on email***
* ***Arguments/ Discussion***

***Many airlines have regular programs designed to encourage flight customers who sign up for the program to earn points. Points there can then be redeemed to find various offers and improvements etc. This is done to increase sales.***

**DEVELOPMENT OF HORIZONTAL FRAMEOWORK**

* ***Services :***
* ***Offer discounts to regular customers.***
* ***Provide special assistance to loyalty cardholders.***
* ***Provide a loyalty card to regular customers.***
* ***Slots :***
* ***Customer Details***
* ***Hooks:***
* ***Cardholders will be promoted first.***
* ***Cardholder will get free home delivery***
* ***Arguments/ Discussion***
* ***Many stores have regular customer service programs designed to encourage customers to sign up for the program to collect points. Points there can then be used to find various offers and improvements etc. This is done to increase sales.***

***For any queries***

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