



## COMSATS University Islamabad, Lahore Campus

### Assignment 2 – Spring 2021

Course Title:	Object Oriented Programming	Course	CSC241	Credit	4(3,1)
Course Instructor/s:	Muhammad Ali Khan	Programme	Software Engineering		
Semester:	2 <sup>nd</sup>	Batch:	FA20	Section:	
				Due Date:	26/04/2021
Time Allowed:		Maximum Marks:			25
Student's Name:		Reg. No.	CUI/SDP-		/LHR

#### **Important Instructions / Guidelines:**

- a) Attempt all the questions.
- b) Draw diagrams where necessary.
- c) Assignment must be submitted in .doc, .docx format
- d) Assignments are not accepted after 11:00 PM on 26<sup>th</sup> April 2021
- e) Use Turnitin for assignment submission
- f) No submission via email is accepted

Q1. Explain the differences between a class, an abstract class and an interface in Java. [6]

Q2. Define compile time and run-time polymorphism and provide a code fragment that implements these concepts. [6]

Q3. If you do not specify an access modifier when you declare a member field of a class, what does Java assign it? Demonstrate your answer by providing minimal Java examples that will and will not compile, as appropriate. [6]

Q4. Consider the Java class below: [8]

package questions;

```
public class X {  
    MODIFIER int value = 3;  
};
```

Another class Y attempts to access the field value in an object of type X. Describe what happens at compilation and/or runtime for the range of MODIFIER possibilities (i.e., public, protected, private and unspecified) under the following circumstances:

- (a) Y subclasses X and is in the same package;
- (b) Y subclasses X and is in a different package;
- (c) Y does not subclass X and is in the same package;
- (d) Y does not subclass X and is in a different package.

Q5. A programming language designer proposes adding 'selective inheritance' whereby a programmer manually specifies which methods or fields are inherited by any subclasses. Comment on this idea. [4]