

Bangladesh Army University of Science and Technology
Department of Computer Science and Engineering
Final Examination, Winter 2022

Course Code: CSE 3101
Time: 03 (Three) hours

Level-3 Term-I
Full Marks: 180

Course Title: Software Engineering

- N.B.
- The questions are of equal value.
 - Figures in the margin indicate full marks allotted to each question.
 - Symbols and abbreviations bear their standard meaning.
 - Use separate answer script for each PART.
 - The corresponding course outcomes (COs) are given in the right most column.

PART- A (Marks: 90)

(Answer any three questions including Q. No. 1)

- | | Marks | COs |
|---|-------|-----|
| 1. a) Write down the philosophy of object oriented software development within 2/3 sentences. | 05 | CO1 |
| b) Observe the following cases to fit the most appropriate design pattern in that scenario— <ul style="list-style-type: none">• To call function with parameter but don't have the same parameters - In such cases we can convert to the parameter expected format and then call the function like integer to string• We have different types of classes than we need• Datatype of a field is different than we need to process - we can convert the field like string to int parsing In these cases, which design pattern should you use? Describe the reason behind your choice and also draw a technical diagram of that design pattern. | 15 | CO2 |
| c) Suppose, you are given a list of ten (10) integer numbers where you have to search 1, 5 and 10. You also have to find the average of all ten numbers. For these two operations all necessary working code segments are given below which may have nasty shortcuts for meeting tight delivery deadline from the client. | 10 | CO3 |

Now refactor the code segment if required—

```
void FindNumbers()
{
    int number[10]= {1,2,5,4,7,8,10,9,3,11}
    //find 1, 5 and 10 from the the number array
    for(int i=0; i<10; i++)
    {
        if(number[i]==1)
            printf("1");
        if(number[i]==5)
            printf("5");
        if(number[i]==10)
            printf("10");
    }

    //find average of all numbers in number array
    int sum=0;
    for(int i=0; i<10; i++)
    {
        sum=sum+number[i];
    }
    float average = sum/10;
    printf("%f", average);
}
```

2. a) Define product backlog? Briefly describe about sprint planning meeting of the scrum framework. Also describe the workload distribution, cost estimation and time estimation process which are generated from the sprint planning meeting as sprint backlog. 25
- b) Write the parameters of a scrum meeting? 05
3. a) Write short notes on below topics: 06
- Dirty Code
 - White Box Testing

- b) Suppose, you are assigned to design a software solution for automating the result processing system of Bangladesh Army University of Science and Technology (BAUST), Saidpur Cantonment. In any data driven software doing CRUD (Create, Retrieve, Update, Delete) operation is a very common task. You may develop many features using CRUD operation for that result processing system as per the requirement specification of BAUST. 24

In that software solution a valid student will get his/her result by providing student identification (ID) number as depicted in the Figure- 3(b).

Now design architecture of that software solution following MVC (Model-View-Controller) framework to reflect the request and response handling flow of the depicted (Figure- 3b) scenario only. Also write pseudo code of necessary controller functions for searching/retrieving student's result with necessary models inside the controller functions.

Note:

- You don't need to define the details of different model classes
- Don't need to write the script for any view
- You don't need to write pseudo code for other controller functions, write pseudo code for only result searching action

Search Result By ID

ID: 200101008

(Search)

Congratulations, Mansura Akter Mim !!
You are promoted to next semester.
CGPA: 3.5

Figure- 3(b): Demo user interface for searching result of a student

4. a) Write down the importance of emotional intelligence in a software project team. 05
- b) Suppose, you are a project manager of "ABC Informatics", a software development company. Your client is expecting a software solution which can adopt the changing requirements easily. Client doesn't have the complete list of requirements but, wants to get a software for the currently available requirements. An active IT team is working for requirement preparation and all necessary communication. 17
- In the above scenario which software development model will be best suited? Explain the reason behind your choice. Also briefly describe that model with necessary technical diagram.
- c) Briefly describe the best-fit cohesion and the best-fit coupling for modular software development. 08