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53 (CS 602) SWEN

2017

SOFTWARE ENGINEERING

Paper : CS 602

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer question no. 1 and any three from the rest.

1. Consider the following case study of CIT's Hostel Management Council (HMC). Once a student takes admission he/she can apply for hostel with the roll no provided by admission cell. With the roll no a student has also to provide his/her details like name, address, phone number, email-id to HMC. The HMC Chairman can allot a hostel and specify a room number for a student. Each room has a fixed room rent. However, twin sharing rooms have lower rent. students have to pay mess charges in every month.

Contd.

The mess manager can input to the software, the mess charge of each student. Whenever, a student have to pay his/her dues, it is computed as the sum of mess charge and room rent. A student can pay his/her dues by using cards or by internet banking.

(a) Design a suitable SRS document for the above case study.

(b) Design a DFD by considering the SRS. You have created in previous question.

20+20

2. (a) Discuss the differences between program and software product.

(b) What is the needs to use life cycle model in software product development?

(c) Briefly discuss about the classical water fall model of software development.

20

3. Consider a software project with 8 tasks T1-T8. Duration of the 8 tasks are 3, 2, 1, 4, 2, 7, 5, 6 days respectively. T2, T3 and T4 can start when T1 is complete. T5 can start when T2 and T3 are complete. T6 can start when T3 and T4 both are over. T7 can start when T5 and T6 are complete. T8 can start when both T6 and T7 are over.

(a) Draw the activity network representation graph for the above problem and compute the critical path.

(b) Compute the earliest start, earliest finish, latest start, latest finish and slack for each task. 10+10

4. (a) Why Function Point (FP) is a better metric for project size estimation than that of Line of Code (LOC) ?

(b) Discuss about the different cohesions and couplings. 10+10

5. (a) Write the differences between white and black box testing.

(b) Consider the following code and compute cyclomatic complexity.

```
int gcd (int a, int b) {
```

```
1. while (a !=b) {
```

```
2.   if (a>b)
```

```
3.     a=a-b;
```

```
4.   else
```

```
5.     b=b-a;
```

```
6.   }
```

```
7.   return a;
```

```
8. }
```

(c) Discuss about the advantages of GUI over command language interface.

5+10+5