Name ……. BITS ID:……..

Birla Institute of Technology & Science, Pilani

AY2017-2018 Semester 1, Software Engineering and Management (SS G562)

Mid-Semester Examination, Oct 2017 (Closed Book)

Max Marks: 25M **Duration: 90 Minutes**

Q1	Q2	Q3	Q4	Total	Recheck Request here

INSTRUCTIONS:

- **ALL questions are compulsory. The paper has total FOUR (4) questions on TEN (10) pages.**
- **Write answers using only the SPACE PROVIDED IN THE PAPER. Use of pencil/pen is allowed as far as text is readable. Use supplementary sheet for the rough work.**
- **DESPITE the CORRECTNESS of an answer, the QUALITY of the answer is an IMPORTANT EVALUATION criterion. Always JUSTIFY your answers. Vague and Overwritten answers will not be entertained.**
- **Mention your assumptions with your answers as and when considered/assumed by you.**
- **Write your name and BITS ID on the top corner of the paper.**

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1. [5M] Consider the following program code:

```
main(){
      int i,list[5]={1,2,3,3,4};
      for(i=0;i<4;i++)
         isEq(list[i],list[i+1]);
}
isEq(int m, int n){
      if (n==m) foo();
      else if (m>n) fii(m);
      else fii(n);
}
foo(){printf("\n Numbers are equal");}
fii(int m){printf("\n%d",m);}
```

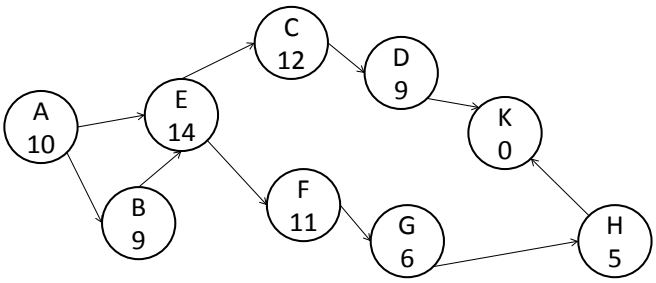
Construct a labeled Data Flow Diagram Model (DFD model) for the above program with its data dictionary. Also explain each step used while drawing the DFD model.

Answer Q1 here

2. **[1M*5=5M]** Answer the following questions:
   (a) Classical Waterfall model are generally considered impractical and cannot be used in real-world projects. Why? Justify using an example.
   (b) Does the deep class hierarchy a characteristic of any good Object-Oriented Design? Justify your answer.
   (c) You are asked to develop an accounting system for BITS Pilani that replaces the existing system. Suggest the most appropriate software process model that might be used as a basis for managing the system development. Give proper justification. Zero marks will be awarded with no justification of the answer.
   (d) Does the concept of pair programming suppress the principle of refactoring? Give justification.
   (e) Can you achieve an effective modular design through functional independence of the modules? Comments.

Answer Q2 here

3. [5M] Consider the following activity network:



(a) Compute earliest start time, latest start time, earliest finish time, latest finish time, slack time.
(b) Using these parameters, identify the critical path. Vague justification will be rewarded with zero mark.

Answer Q3 here

4. **[2M*5=10M] Answer the following questions:**
   (a) Identify and explain two factors contributing to the present software crisis. Can we mitigate the impacts of the software crisis? Answer either Yes or No. Also, justify reasoning behind your choice.
   (b) Why it is so vital to make a distinction between developing the system requirements and developing user requirements during the requirements engineering process? How the two types of requirements affect each other? Justify.
   (c) The three common ways by which a software development organization can be structured are functional format, project format, and matrix format. Identify and explain the advantages and disadvantages of each format.
   (d) Compare the spiral model and prototyping model with respect to their risk handling capability.
   (e) Explain the major differences and similarities between the rapid application development model and evolutionary model of software development.

Answer Q4 here and on next remaining pages