

Assignment 1

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B.C. - 789

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1. Software is set of programs which is designed to perform well-defined functions. A program is a source of instructions written to solve particular problem.

TWO types of software are:

- 10 (1) System software \rightarrow OS, compilers, assemblers etc.
- (2) Application software \rightarrow TURBO C, software etc.

Software engineering \rightarrow It is a process of developing a software product in well-defined systematic approach using scientific principles, methods and procedures.

Software process \rightarrow It is a set of related activities that leads to the production of software. It may involve development of software from scratch or modify existing system.

Ans 2) No. of user input = 32

No. of user output = 60

No. of user inquiries = 24

25 No. of external interfaces = 2

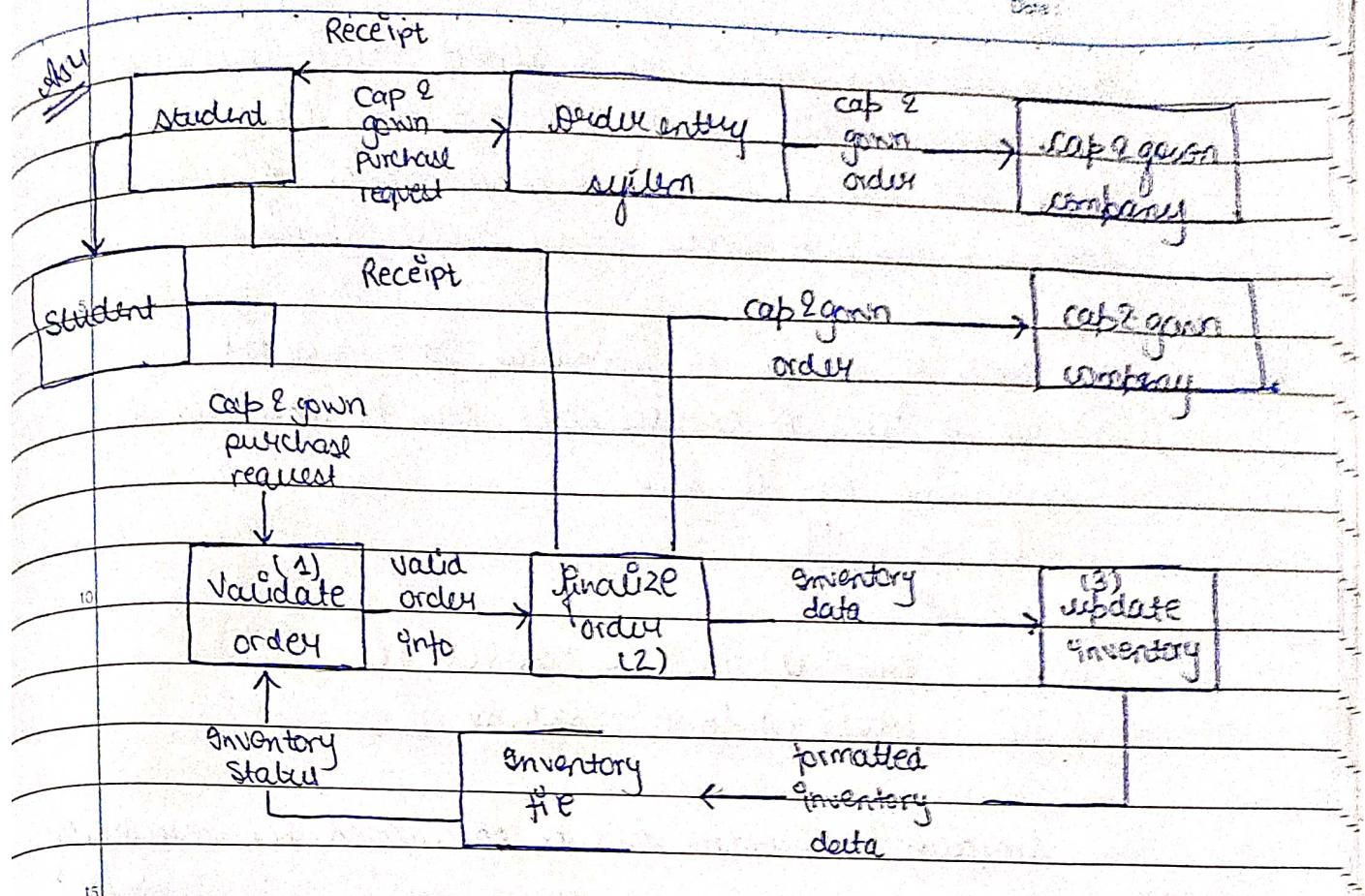
No. of file = 2

Complexity adjustment value avg.

$$\begin{aligned} \text{Count total} &= 32 \times 4 + 60 \times 5 + 24 \times 4 + 8 \times 10 + 2 \times 7 \\ &= 128 + 300 + 96 + 80 + 14 \\ &= 618 \end{aligned}$$

$$\begin{aligned}\text{Function point (FP)} &= \text{count total} \times (0.65 + 0.01 \times S(\cdot)) \\ (\text{FP}) &= 618 \times 10.65 + 0.01 \times 30 \\ &= 618 \times (0.65 + 0.3) \\ &= 618 \times 0.95 \\ &= \underline{\underline{587.10}}.\end{aligned}$$

Ans 3. Physical data flow diagrams help you better understand the people or computer system that are used in the overall system's processing. Logical data flow diagrams help you better understand the essence of system, the data and the processes that transform them, regardless of actual physical form. Further the new logical data flow diagram can then show any additional functionality needed in new system, to indicate which obsolete components have been eliminated, and any changes in logical flow of data between system components including different stores. The DFD for new physical system can then be constructed with DFD for new logical systems



~~This is the case of embedded mode and model is incremental COCOMO. Hence,~~

$$E = 0.8(kLOC)^{0.9} \\ = 0.8(400)^{0.9} = 371 \text{ PM}$$

~~case 1 Developers are highly capable with very little experience in programming being used.~~

$$EAF = 0.8 \times 1.14 = 0.9348$$

$$E = 371 \times 0.9348 = 346.977 \rightarrow \\ = 347 \text{ PM.}$$

$$D = 0.5 \times (347)^{0.32} = 33.9 \text{ m}$$

~~case 2: Developers are of low quality but lots of experience with programming lang being used.~~

$$EAF = 0.9 \times 0.95 = 0.89$$

$$E = 371 \times 0.89 = 329.49 \text{ PM}$$

$$D = 0.5 \times (329.49)^{0.32} = 36.9 \text{ m.}$$

Case 2 requires more time & effort. Hence less capable developer with lot of programming language experience could not match with the performance of very high capable developer with very little experience.

Ans:

The amt. of manpower involved = $8 \text{ P.Y} = 96 \text{ P.M}$

(a) No. of line of source code can be obtained by reversing sign in given

$$L = (E) \frac{1}{a} b$$

$$L(\text{SEL}) = 196(1.4) \frac{1}{0.93} = 246.64 \text{ L.C.}$$

$$L(\text{SEL}) = 196(5.2) \frac{1}{0.91} = 246.32 \text{ L.C.}$$

(b) duration in months can be calculated by means of eqn.

$$D(\text{SEL}) = 4.6(1) 0.06$$

$$= 4.6 (94.064) 6.06 = 15 \text{ months}$$

$$D(\text{W-F}) = 4.1(2) 0.36$$

$$= 4.1 (24.632) 0.36 = 13 \text{ months}$$

(c) Productivity is line of code produced per person month/year

$$P(\text{SEL}) = 246.64 / 8 = 30.83 \text{ L.C. - years / person}$$

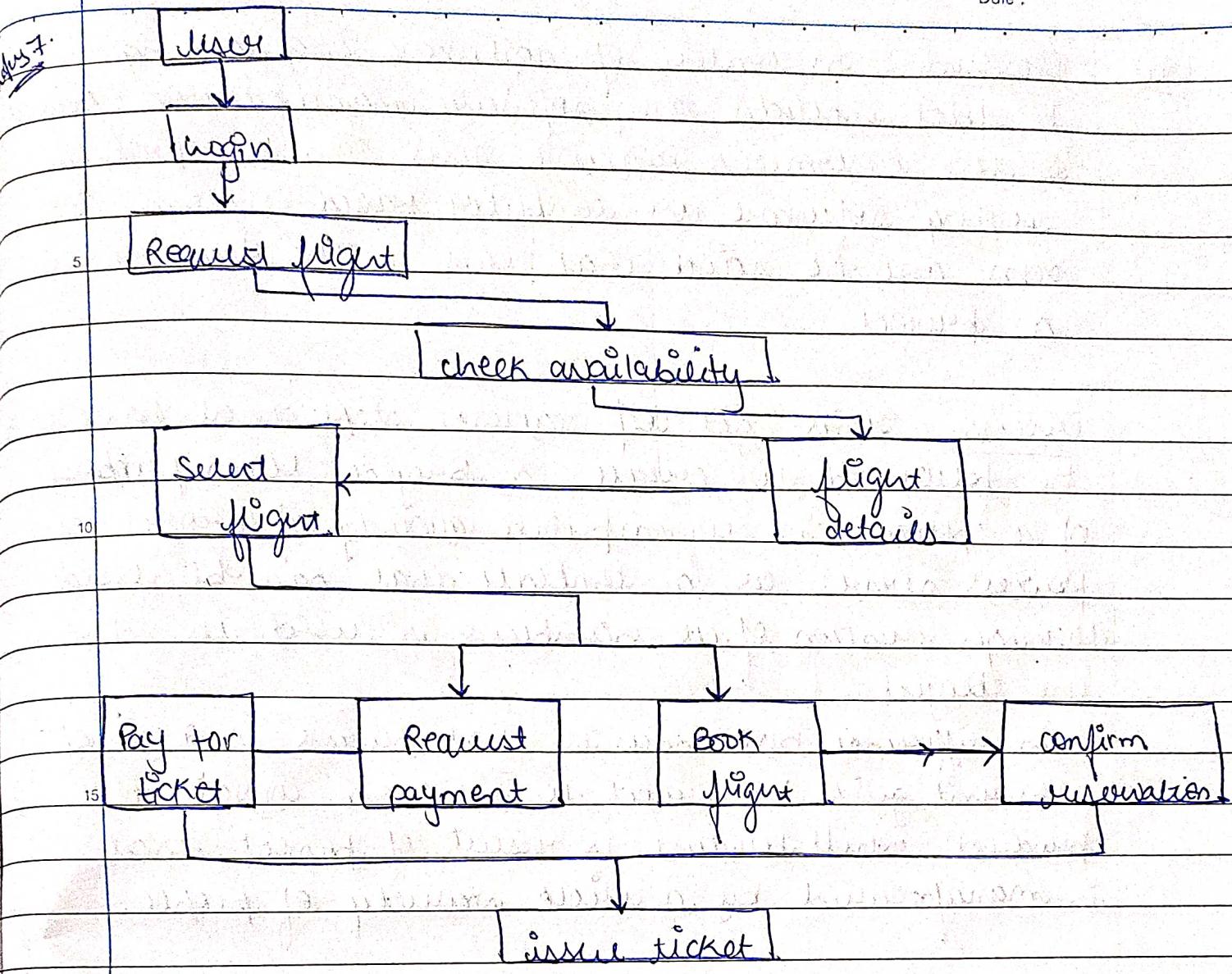
$$P(\text{years}) = 246.32 / 8 = 30.79 \text{ L.C. - years / person}$$

(d) Avg. manning is avg. no. of person required per month in project.

$$M(\text{SEL}) = \frac{96 \text{ P.M}}{15 \text{ m}} = 6.4 \text{ persons}$$

$$M(\text{W-F}) = \frac{96 \text{ P.M}}{13 \text{ m}} = 7.4 \text{ persons}$$

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Disadvantages

- To implement iterative model, more resources are required.
- It is not suitable for smaller projects.
- Projects progress is highly dependent upon risk analysis phase.
- It is not very suitable for changing requirements.
- More management attention is required.

Ans. (a) Milestone can be inserted at any point and are used to break down large projects or complex deliverables into more manageable chunks. Used mainly as scheduling tool, it can also signal that a progress report is coming due or a major activity has started.

Deliverables represent amount of work teams will have to complete according to agreed upon terms, while milestones indicate important points in project life cycle. Deliverables dictate what team must work towards while milestone help team gauge the project performance against targets.

(a) Product: In context of software engineering, product includes any software manufactured based on the customer's request. It can be problem solving software or computer based system. It may also be said that this is the deliverable of a project.

Process: It is set of sequence steps that have to be followed to create a project. Main purpose of a process is to improve quality of project. The process serves as a template that can be used through creation of its examples & is used to deliver the project.

Main difference b/w them is that process is a set of steps that guide the project to achieve a convenient product while product is result of project which is manufactured by a wide variety of people.

(c) Metric → measurement of degree or measure for something. A software metric is a standard of measure of a degree you ex. func. per 1 LOC / KLOC etc. Metric can be standard of measurement too.

Measurement: Indication of size, qty amount or dimension. ex. in, m, sec etc.

Measure is amount of degree of something main difference of metric and measure is that metric is derivative of measure.