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16L-4005
CS-B

Date 29th June, 20

Introduction to Software Project and Management

Answer(s):

Q1 a): no. of inputs = (3) [password, acti/deacti, panic button]
no. of outputs = (2)
no. of files: (1)
no. of user inquiries: (2)
no. of external interfaces (4)

Parameters	count	Complexity low	average	high
user-input	3	3	4	6
user-output	2	4	5	7
user inquiries	2	3	4	6
external interface	4	5	7	10
files	1	7	10	15

total unadjusted functional points = (3)(3) + (2)(5) + (2)(6) + (4)(10) + (1)(10)
= 9 + 10 + 12 + 40 + 10
= 81

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b) :

$81 \times 0.05 = 4.05$

$size = 81 \times 50 = 4050 = 4.05$ kilo

$pm = A * size^{sf} * em_1 * em_2 * em_n$

scale factor $sf = 0.91 + 0.01 * \Sigma$ (exponent driver ratings)

$= 0.91 + 0.01\ (3+4+3+1+3)$

$= 0.91 + (0.01)(14)$

$\boxed{sf = 1.05}$

$pm = (2.94) * (4.05)^{1.05} (1.3)(1.0)(1.0)(1.1)(1.0)(1.2)$

$pm = \boxed{21.92 \text{ person-months}}$

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Q2): Answer (s)

Activity ID	Activity Description	Precedents	ta Optimistic	tm Most likely	tb Pessimistic
1	Specify overall system		3	5	7
2	Specify module A	1	4	6	8
3	Specify module B	1	2	4	6
4	Specify module C	1	5	7	9
5	Specify module D	1	2	4	6
6	Check specs	2,3,4,5	1	3	5
7	Design module A	6	2	4	6
8	Design module B	6	4	6	8
9	Design module C	6	3	5	7
10	Design module D	6	1	3	5
11	Code/test module A	7	3	5	7
12	Code/test module B	8	2	4	6
13	Code/test module C	9	4	6	8
14	Code/test module D	10	2	4	6
15	System integration	11,12,13,14	4	6	8

$$\text{expected duration} = \left(\frac{ta + 4 \times tm + tb}{6}\right)$$

ID	expected duration	ID	expected duration
1	5	8	6
2	6	9	5
3	4	10	3
4	7	11	5
5	4	12	4
6	3	13	6
7	4	14	4
		15	6

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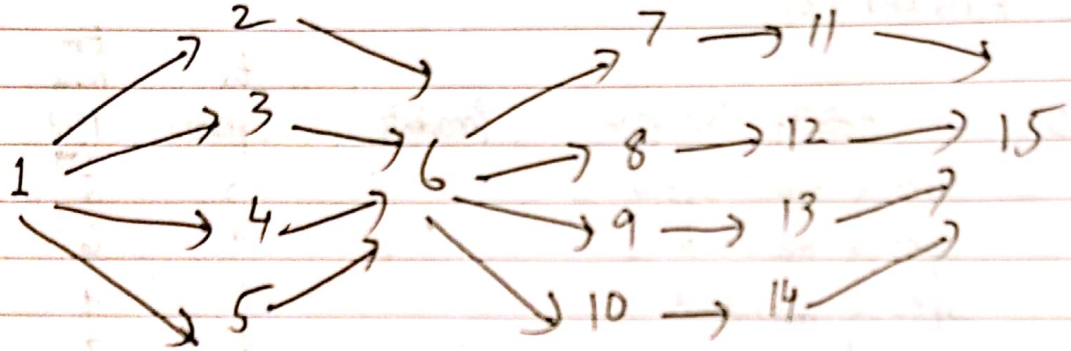
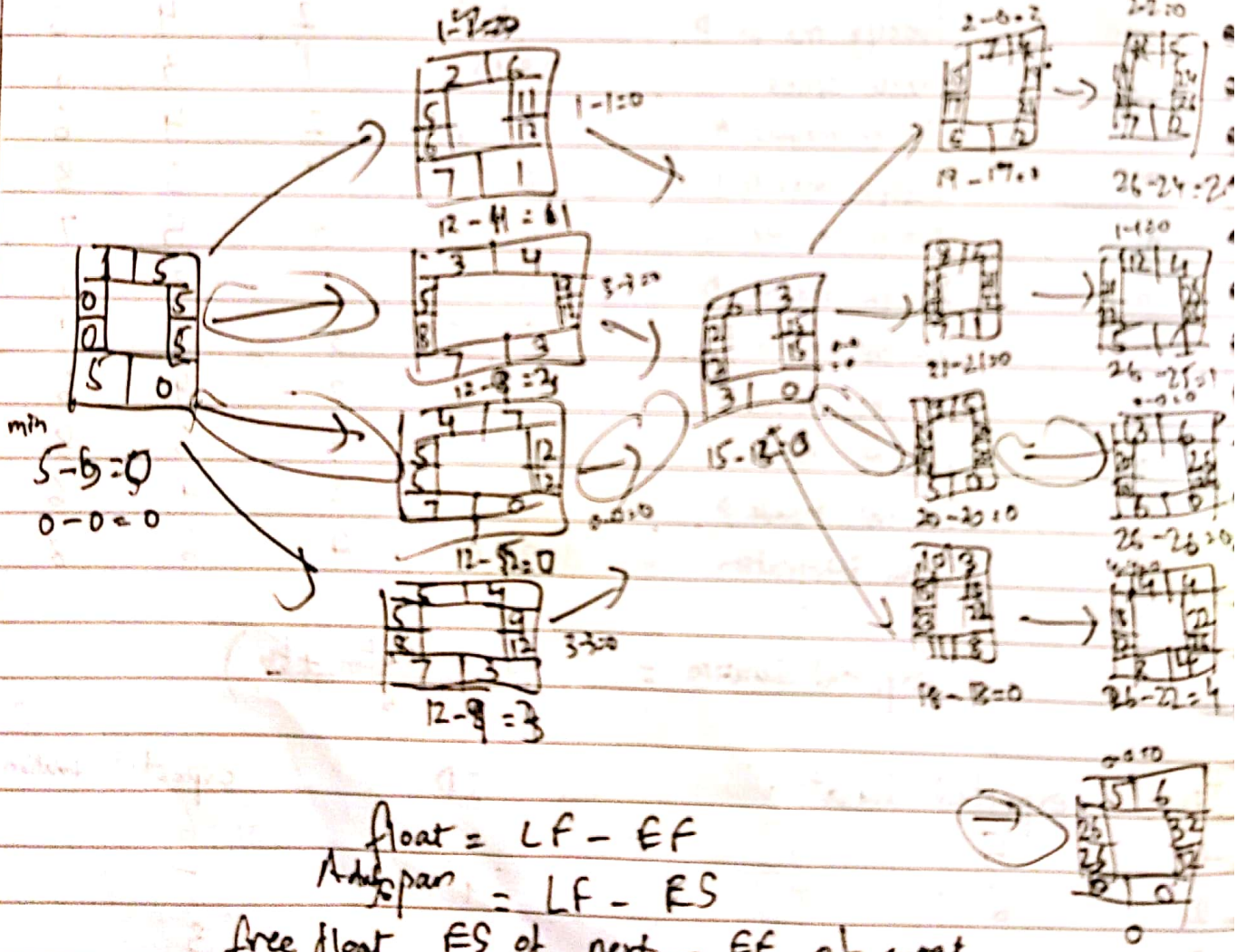
ID expected duration





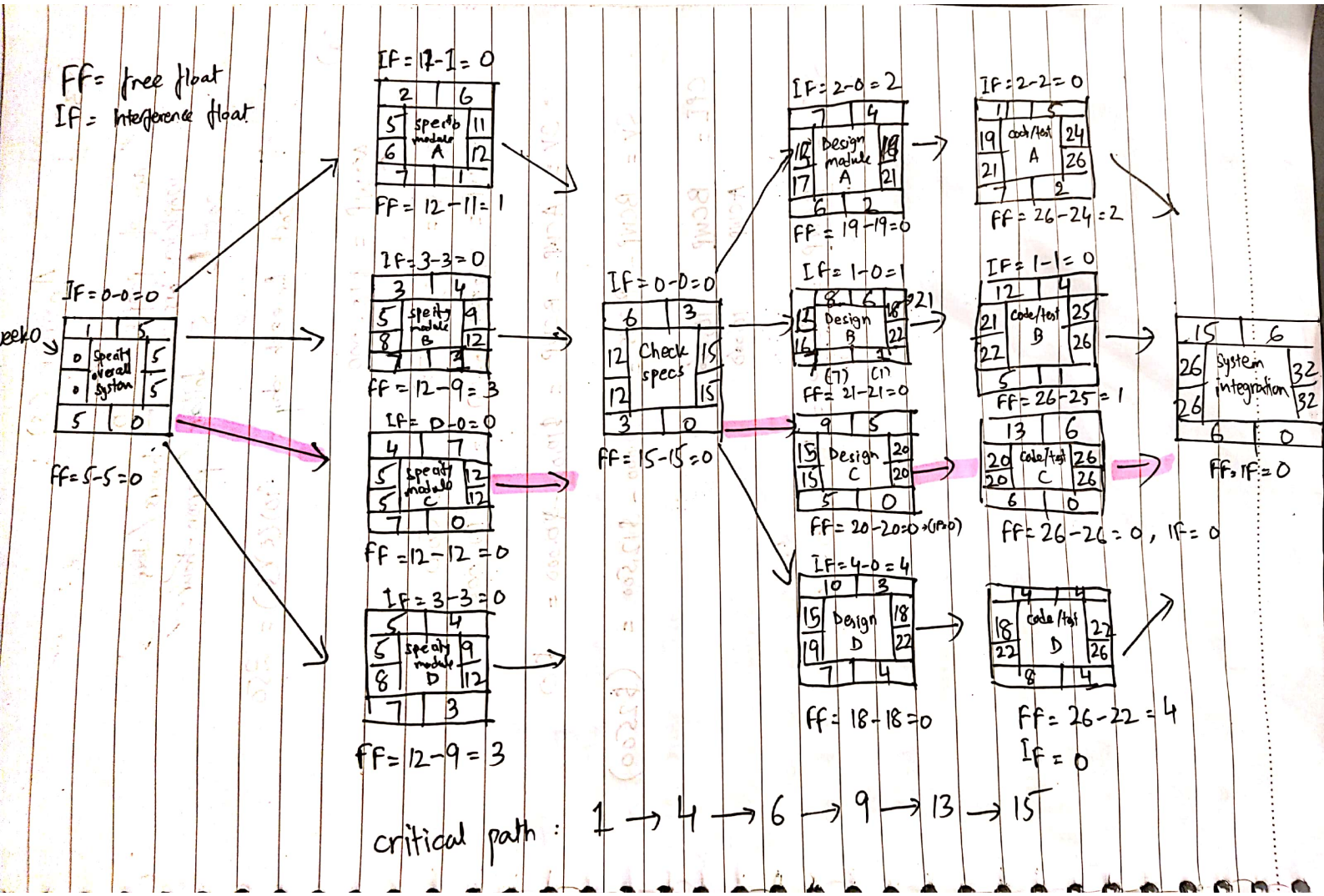
float = LF - EF

Adv span = LF - ES

free float ES of next - EF of curr

Interfering total = Total float - free float

ID ff



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Q3) : Answer (s) :

no. of people = 10
working hrs = 5 hours/day
cost = 5 dollars / person-hour

cost for each day = (10)(5)(5) = 250

(a)

ACWP = $10,000

BCWS = (250)(50) = $12,500
BCWP = (250)(50-10) = $10,000

CV = ACWP − BCWP = $10,000 − $10,000 = $0

SV = BCWP − BCWS = $10,000 − $12,500 = ($2500)

$$CPI = \frac{BCWP}{ACWP} = \frac{10,000}{10,000} = 1$$

$$SPI = \frac{BCWP}{BCWS} = \frac{10,000}{12,500} = \frac{4}{5} = 0.80$$

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b) The things we can do if our project has slipped from its schedule are:

→ Work overtime: It is a feasible option if the project is in the latter part. It should be done for a shorter period of time but it is not fruitful for the longer run causing a few problems like delays etc.

→ Assign critical tasks to experienced staff:
The tasks with a higher risk should be assigned to the more efficient lot. Reassign accordingly as the project progresses

→ Scaling back of scope
According to the work remaining one can negotiate with the client and lessen the scope accordingly. For example, if something left is not important to the project then it may be removed.

→ Reconsider dependencies and precedences
Check if the sequential activities can be converted to parallel. It can be done so by subdividing the activities for e.g design and coding parts can be shifted earlier. However, quality of overall project decreases if too many activities are being done in parallel.

→ Check time-constrained activities
To keep the timeframe intact, such activities that have constant durations regardless of the resources should be checked. The time of such activities can be reduced by increasing the working hours by paying more for over-time.

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Reduce quality : Do not send anything untested to the client. It is not good for the longer run.

Exception planning

Figure out the priorities of the client and work accordingly. This involves other stakeholders apart from the project manager as well