

18/07/24

1. GIVEN:

Analysis : 30 person-days

Design : 40 person-day

Implementation : 70 person-days

Testing : 35 person-days

Maintenance : 25 person-days per month of 12 months.

The hourly rate for each team member = \$50

team = 5 members.

Overhead cost of entire project = \$10,000

a) Total cost for each phase of the project

1. Analysis :

Person-hours : 30 days \times 8 hours/day = 240 hours

Total person-hours : 240 hours \times 5 members = 1200 person-hours

Cost : 1200 person-hours \times \$50/hour = \$60,000.

2. Design :

Person-hours : 40 days \times 8 hours/day = 320 hours

Total person-hours : 320 \times 5 = 1600 person-hours.

Cost : 1600 \times \$50/hour = \$80,000

3. Implementation :

Person-hours : 70 days \times 8 hours/day = 560 hours

Total person-hours : 560 \times 5 = 2800 person-hours

Cost : 2800 \times \$50/hour = \$140,000

4. Testing :

Person-hours : 35 days \times 8 hours/day = 280 hours

Total person-hours : 280 \times 5 = 1400 person-hours

Cost = 1400 \times \$50 = \$70,000

5. Maintenance :

Person-hours per month : 25 \times 8 = 200 hours/month

Total person-hours : 200 \times 12 = 2400 hours

Total person-hours for team : 2400 \times 5 = 12,000 person-hours

Cost = 12000 \times 50 = \$600,000

b) calculate the overall project cost, including the maintenance phase.

$$\text{sum of all phases} = 60,000 + 80,000 + 140,000 + 70,000 + 60,000 \\ = \$950,000$$

$$\text{Overhead costs} = \$10,000$$

Total project cost:

$$\$950,000 + \$10,000 = \$960,000$$

c) If the project is delayed by 2 months in the implementation phase, what would be the additional cost incurred?

Implementation phase delay: 2 months

Person-days per month: 70 / no. of working days in a month
[no. of working days = 22]

$$\text{Additional person-days} = 2 \times 22 = 44 \text{ additional person-days}$$

$$\text{Person-hours for delay} = 44 \times 8 = 352 \text{ hours}$$

$$\text{Total person-hours for team} = 352 \times 5 = 1760 \text{ person-hours}$$

$$\text{Additional cost} = 1760 \times 50 = \$88,000$$

d) Reduce maintenance phase to 6 months

Person-days per month: 25

$$\text{Person-hours / month} = 25 \times 8 = 200 \text{ hours/month}$$

$$\text{Total person-hours for 6 months} = 200 \times 6 = 1200 \text{ hours}$$

$$\text{Total person-hours for team} = 1200 \times 5 = 6000 \text{ person-hours}$$

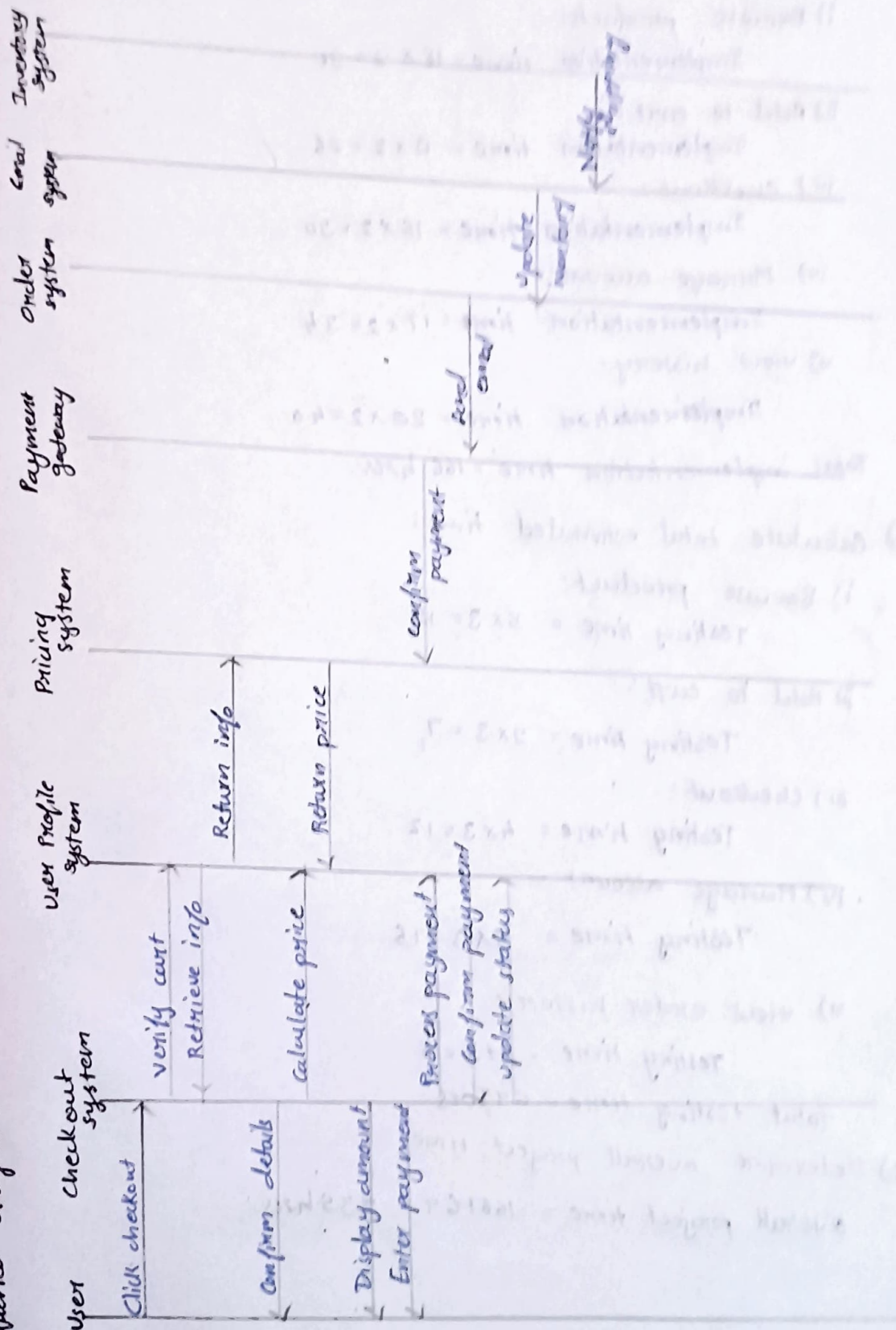
$$\text{Cost for 6 months} = 6000 \times 50 = \$300,000$$

$$\text{Original maintenance cost for 12 months} = \$600,000$$

$$\text{Cost saving} = 600,000 - 300,000 = \$300,000$$

2. Scenarios

1. user
2. checkout system
3. user profile system
4. Pricing system
5. payment gateway
6. order status
7. Email system
8. Inventory system
9. shipping system



3. Implementation time per complexity point: 2 hrs

Testing time per scenario: 3 hrs

a) Calculate the total estimated time:

i) Browse products:

$$\text{Implementation time} = 18 \times 2 = 36$$

ii) Add to cart:

$$\text{Implementation time} = 13 \times 2 = 26$$

iii) Checkout:

$$\text{Implementation time} = 15 \times 2 = 30$$

iv) Manage account:

$$\text{Implementation time} = 17 \times 2 = 34$$

v) view history:

$$\text{Implementation time} = 20 \times 2 = 40$$

Total implementation time = 166 hrs.

b) Calculate total estimated time:

i) Browse product:

$$\text{Testing time} = 5 \times 3 = 15$$

ii) Add to cart:

$$\text{Testing time} = 3 \times 3 = 9$$

iii) Checkout:

$$\text{Testing time} = 4 \times 3 = 12$$

iv) Manage account:

$$\text{Testing time} = 5 \times 3 = 15$$

v) view order history

$$\text{Testing time} = 6 + 3 = 9$$

total testing time = 69 hrs

c) Determine overall project time:

$$\text{overall project time} = 166 + 69 = 235 \text{ hrs.}$$