

## Request 1

WBS – break down to level 3 or level 4, as appropriate. ít nhất là 3-4 items

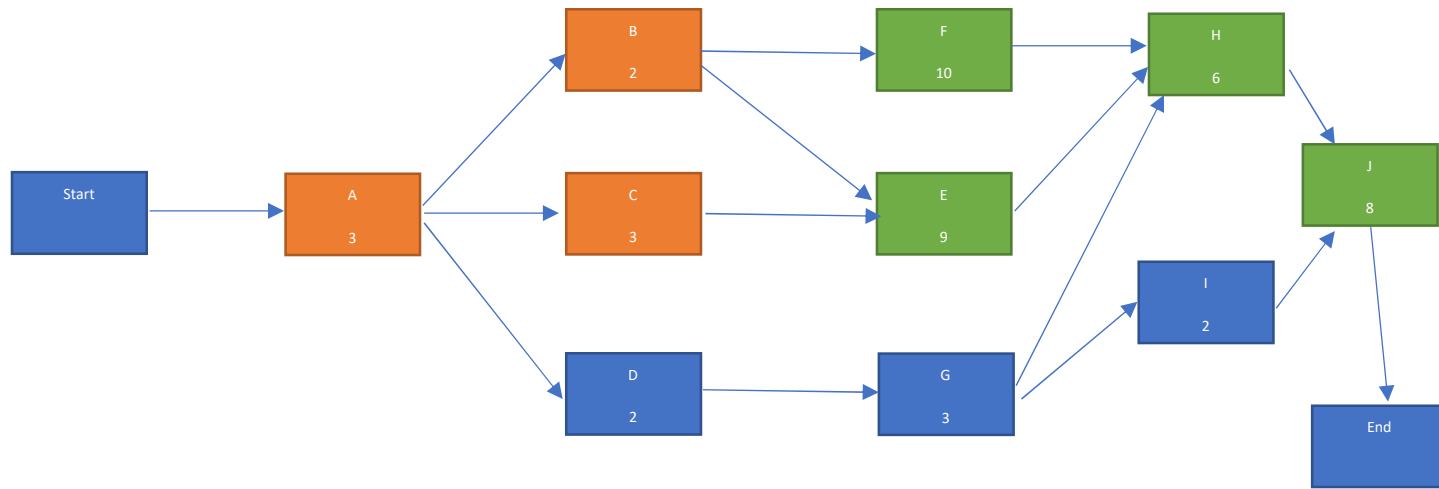
1. Software Project (level 1)
  - a. Initiating (level 2)
    - i. Create Project Charter (level 3)
    - ii. Kick-off Meeting
    - iii. Get Project Charter Approval
    - iv. Create Stakeholder Register
    - v. Complete Initiating Stage ← Milestone 1
  - b. Planning
    - i. Create Scope Management Plan (level 3)
    - ii. Create Time Management Plan
    - iii. Create Cost Management Plan
    - iv. Create Risk Management Plan
    - v. Create Resource Management Plan
    - vi. Meeting with team to discuss about plans
    - vii. Deliver Project Management Plan
    - viii. Complete Planning Stage ← Milestone 2
  - c. Executing
    - i. Analysis
      1. Create Feasibility report
      2. Create Use-case diagram and Use-case description
        - a. Create use-case for module 1
        - b. Create use-case for module 2
        - c. ...
      3. Create Software Requirement Specification
      4. Perform Requirement validation
      5. Perform Requirement Management
      6. Complete Analysis Stage ← Milestone 3 (Major milestone)
    - ii. Design
      1. Create Design for module to allow students to register for university-sponsored Lab classes (module 1)
      2. Complete Design for module 1 ← Milestone 4 (minor milestone)
      3. Create Design for module to allow students to submit their work in the Lab class and to track their progress. (module 2)
      4. Create Design for module to allow teacher to manage his classes and to evaluate his students submitted work, to approve or to reject the work (module 3)
      5. Create Design for module to allow teacher to generate the final report of his classes at the end of the semester (module 4)
    - iii. Prototyping
      1. Create Prototype for module 1
      2. Review prototype of module 1 with customer

3. Create Prototype for module 2
    4. Review prototype of module 2 with customer
    5. Create Prototype for module 3
    6. Review prototype of module 3 with customer
    7. Create Prototype for module 4
    8. Review prototype of module 4 with customer
  - iv. Implementing
    1. Implement module 1
    2. Implement module 2
    3. Implement module 3
    4. Implement module 4
    5. Complete Implementing phase
  - v. Testing
    1. Perform Unit Testing
    2. Perform Integration Testing
    3. Perform System Testing
    4. Perform Acceptance Testing
    5. Complete Testing phase
  - vi. Support
    1. Training (level 4)
    2. Documentation
    3. User Support
    4. Enhancements
- d. Monitoring and Controlling (level 2)
  - i. Control Scope
  - ii. Track Progress
  - iii. Perform Cost Control
  - iv. Monitor and Control Risk
- e. Closing (level 2)
  - i. Create Lesson Learn
  - ii. Create Project Final Report
  - iii. Create Project Archive
  - iv. Close Project Ceremony

## Request 2

No	Milestone	Deliverable	Explanation
1	Complete Initiating Stage	Approved Project Charter Kick-off Meeting Minutes Stakeholder Register	<ul style="list-style-type: none"><li>• Specific: this milestone is specified for initiating process</li><li>• Measurable: it's measurable by tracking the completion of 3 deliverable</li><li>• Attainable: it's attainable when 3 deliverables are completed</li><li>• Relevant: yes, it's relevant</li><li>• Time-bound: yes, it has 1 week to complete.</li></ul>
2	Complete Planning Stage	Project Management Plan	<ul style="list-style-type: none"><li>• Specific: this milestone is specified for planning process</li><li>• Measurable: it's measurable by tracking the completion of project management plan</li><li>• Attainable: it's attainable when project management plan is completed and it includes Scope, Time, Cost, Risk, Resource Management Plan and the meeting with team has been done.</li><li>• Relevant: yes, it's relevant</li><li>• Time-bound: yes, it has 1 week to complete.</li></ul>
3			
4			
5			

### Request 3



List of Paths in the network:

Path 1: Start -> A -> B -> F -> H -> J -> End with duration =  $3 + 2 + 10 + 6 + 8 = 29$  weeks

Path 2: Start -> A -> B -> E -> H -> J -> End with duration =  $3 + 2 + 9 + 6 + 8 = 28$  weeks

Path 3: Start -> A -> C -> E -> H -> J -> End with duration =  $3 + 3 + 9 + 6 + 8 = 29$  weeks

Path 4: Start -> A -> D -> G -> H -> J -> End with duration =  $3 + 2 + 3 + 6 + 8 = 22$  weeks

Path 5: Start -> A -> D -> G -> I -> J -> End with duration =  $3 + 2 + 3 + 2 + 8 = 18$  weeks

Critical Paths are Path 1 and Path 3. And the project duration is 29 weeks

**Request 4:**

Fast tracking and Crashing

Fast tracking

Arrange Task H so that it overlaps over tasks E and F on 2 weeks.

Crashing

Force Team to work Overtime on task F and E to complete them earlier than 2 weeks

Force Team to work Overtime on task H to complete it earlier than 2 weeks

Reward Team if they can complete task H earlier than 2 weeks

**Request 5:**

Earned Value Management

Total Planned Budget = 8400000

Scheduled in 5 years \* 12 = 60 months

A month yield =  $8400000 / 60 = 140000$ .

At the end of 15<sup>th</sup> month.

Planned Value (PV) = 15 \* a month yield =  $15 * 140000 = 2100000$

Actual Cost (AC) = 2650000

Earned Value (EV) = CPI \* AC =  $0.95 * 2650000 = 2517500$

Schedule Variant (SV) = EV – PV > 0 =  $2517500 - 2100000 = 417500$

Cost Variant (CV) = EV – AC > 0 =  $2100000 - 2650000 = - 550000$

Schedule Performance Index (SPI) = EV / PV > 100% =  $2517500 / 2100000 = 1.2$

Cost Performance Index (CPI) = EV / AC > 100% = 0.95

Estimated Budget At Completion (BAC) = Total Planned Budget / CPI =  $8400000 / 0.95 = 8842105.27$

Estimate Schedule to complete project =  $60 \text{ months} / 1.2 = 50 \text{ months}$

