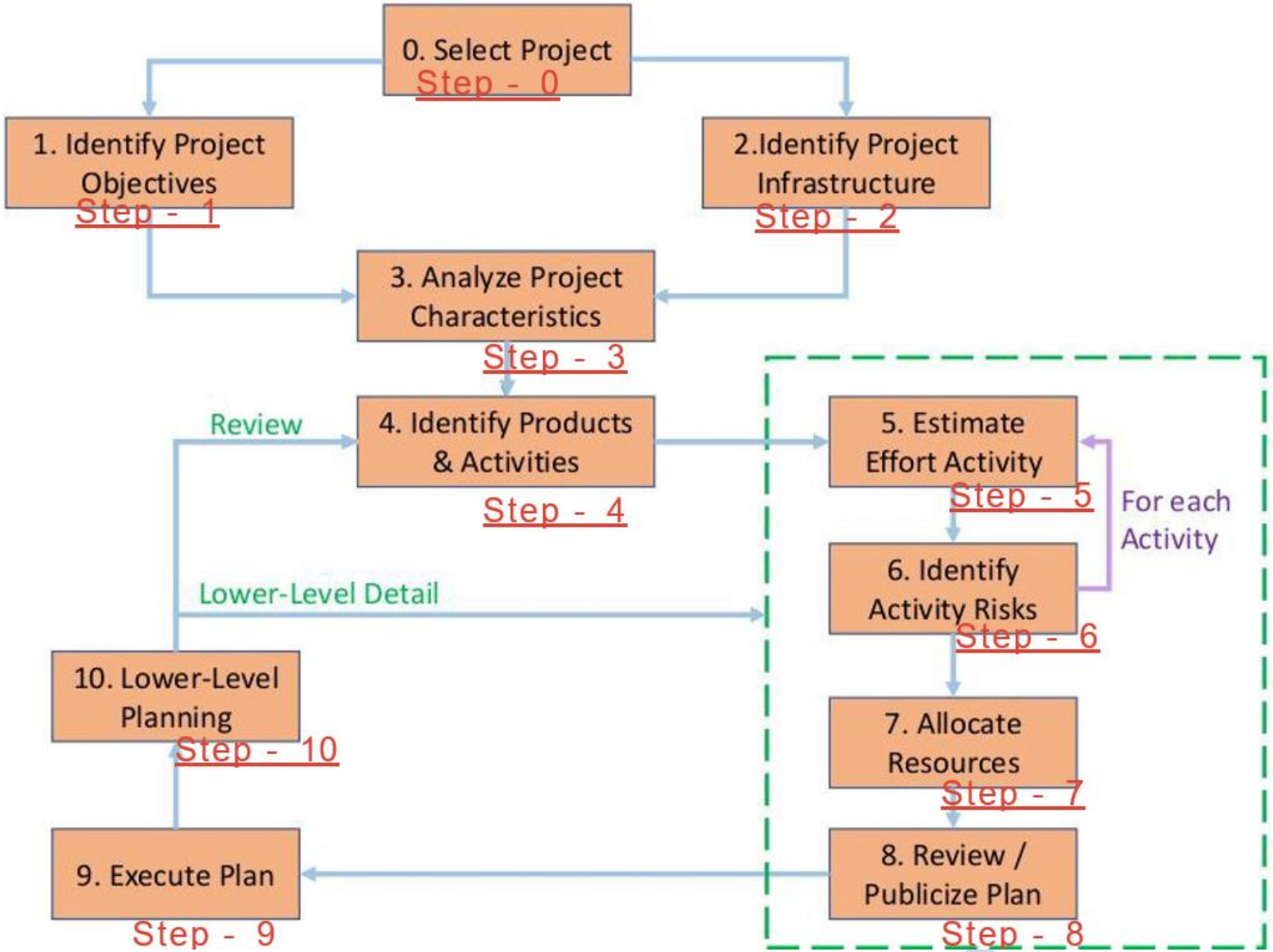
# IS 2108 – IT Project Management

Lecture 03

Project Planning II


0. Select Project
Step - 0
1. Identify Project Objectives
Step - 1
2.Identify Project Infrastructure
Step - 2
3. Analyze Project Characteristics
Step - 3
Review
4. Identify Products & Activities
Step - 4
5. Estimate Effort Activity
Step - 5
For each Activity
6. Identify Activity Risks
Step - 6
Lower-Level Detail
7. Allocate Resources
Step - 7
8. Review / Publicize Plan
Step - 8
9. Execute Plan
Step - 9
10. Lower-Level Planning
Step - 10

# Project Planning Steps

- Step 0 – Select project
- Step 1 – Identify project scope and objectives
- Step 2 – Identify project infrastructure
- Step 3 – Analyze project characteristics
- Step 4 – Identify the project products and activities
- Step 5 – Estimate effort for each activity

# Project Planning Steps contd..

- Step 6 – Identify activity risks
- Step 7 – Allocate resources
- Step 8 – Review/ Publicize plan
- Step 9 – Execute plan
- Step 10 – Lower level planning

# Step 0 – Select Project

- Outside main project planning process
  - Hence step 0
- Feasibility study justifies project selection
- Evaluation of project selection
  - Individual basis
  - Part of strategic planning

# Step 1 – Identify Project Scope and Objectives

- Identify objectives and measures of effectiveness in meeting them
- Establish a project authority
- Identify stakeholders
- Modify objectives in the light of stakeholder analysis
- Establish methods of communication with all parties

# Step 2 – Identify Project Infrastructure

- Establish relationship between project and strategic planning
- Identify installation standards and procedures
- Identify project team organization

# Step 3 – Analyze Project Characteristics

- Distinguish the project as either objective or product driven
- Analyze other project characteristics
- Identify high-level project risks
- Take into account user requirements concerning implementation
- Select general life cycle approach
- Review overall resource estimates

# Step 4 – Identify the Project Products and Activities

- Identify and describe project products (Including quality criteria)
- Document generic product flows
- Recognize product instances
- Produce ideal activity network
- Modify ideal network to take into account need for stages and checkpoints

# Step 5 – Estimate effort for each activity

- Carry out bottom-up estimation
- Revise plan to create controllable activities

# Step 6 – Identify activity risks

- Identify and quantify activity-based risks
- Plan risk reduction and contingency measures where appropriate
- Adjust plans and estimates to take account of risks

# Step 7 – Allocate resources

- Identify and allocate resources
- Revise plans and estimates to account for resource constraints

# Step 8 – Review/ Publicize plan

- Review quality aspects of project plan
- Document plans and obtain agreement

# Step 9 & 10 – Execute plan and Lower- level planning

- Develop the plans for each activity in greater detail (because they have to wait for details till, they are available)
- This is common in an iterative development approach.

# Activity Planning

- Ensure that the appropriate resources will be available precisely when required
- Avoid different activities competing for the same resources at the same time
- Produce a detailed schedule showing which staff carry out each activity
- Produce a detailed plan against which actual achievement may be measured
- Produce a timed cash flow forecast
- Re-plan the project during its life to correct drift from the Target

# Objectives of Activity Planning

- Feasibility assessment
  - Is project possible within required timescales and resource constraints?
- Resource allocation
  - What are the most effective ways of allocating resources?
- Detailed costing
  - How much will the project cost and when is that expenditure likely to take place?
- Motivation
  - Providing targets and being seen to monitor achievement against targets
- Co-ordination
  - When do the staff in different departments need to be available to work on a particular project and when do staff need to be transferred between projects?

# When to Plan

- Planning is an on-going process of refinement
- Over successive iterations, the emphasis and purpose of planning will shift
- Beyond feasibility study, emphasis will be upon production of activity plans for ensuring resource availability and cash flow control
- Throughout the project, until the final deliverable has reached the customer, monitoring and re-planning must continue

# Project Schedules

- Defining Activities
  - A project is composed of a number of interrelated activities
  - A project may start when at least one of its activities is ready to start
  - A project will be completed when all of the activities it encompasses have been completed
  - An activity must have a clearly defined start and a clearly defined end-point, normally marked by the production of a tangible deliverable
- If an activity requires a resource (as most do) then that resource requirement must be forecastable and is assumed to be required at a constant level throughout the duration of the activity

# Project Schedules

- The duration of an activity must be forecastable – assuming normal circumstances, and the reasonable availability of resources
- Some activities might require that others are completed before they can begin (these are known as precedence requirement)
-

# Sequencing and Scheduling Activities

- Throughout a project, we will require a schedule that clearly indicates when each of the project's activities is planned to occur and what resources it will need.
- Take account of the nature of the development process (that is, certain tasks must be completed before others)

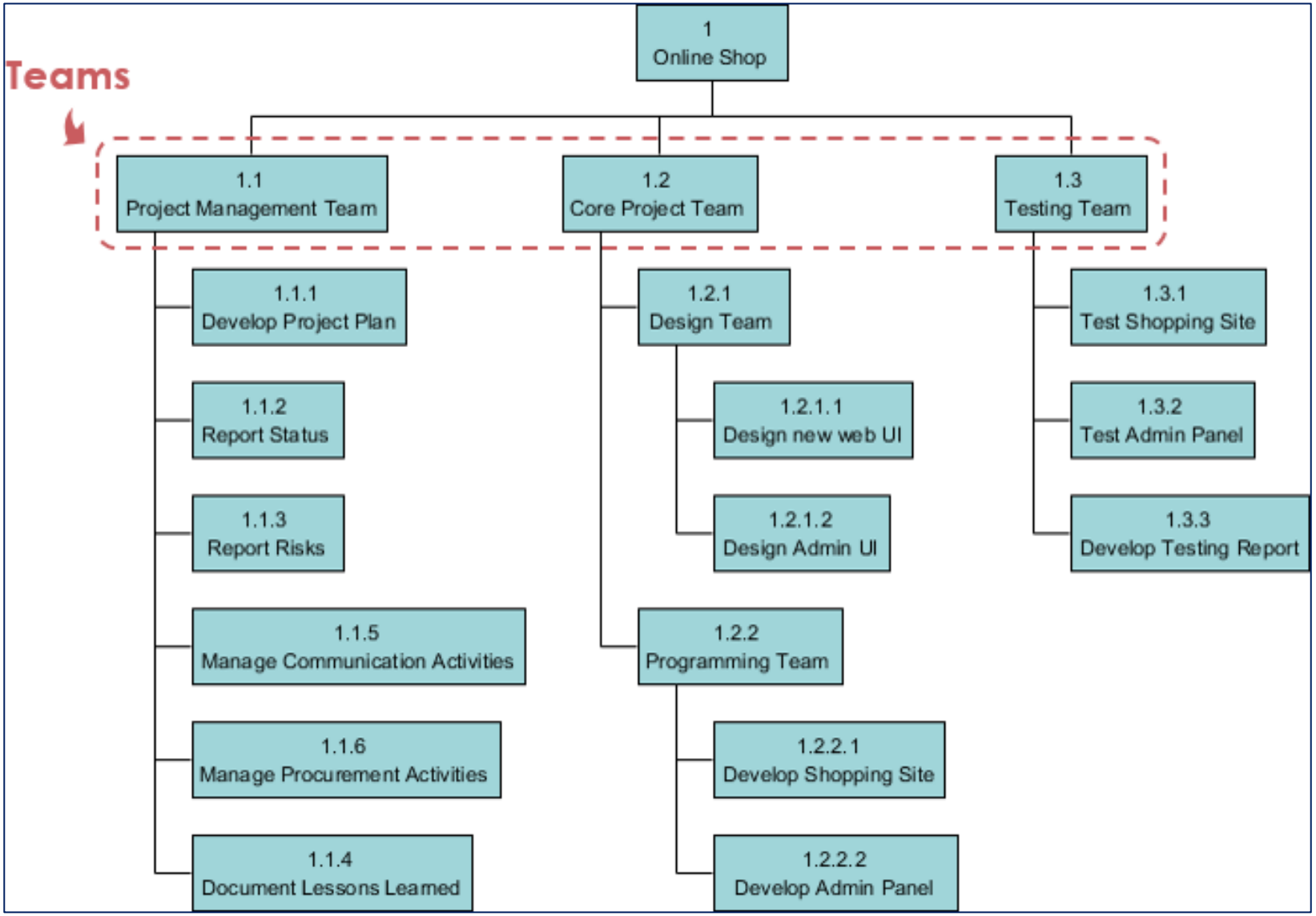
# Work Breakdown Structure (WBS)

- Divide project into components and then sub-divide them until you identify the manageable tasks.
- Manageable tasks mean:
  - Ability to assign responsibilities
  - Reduce interdependence between tasks
  - Ability to measure progress

# Uses of WBS

- Estimate costs
- Schedule activities
- Identify responsibilities
- Develop network analysis
- Analyse risk of each activity
- Can find the milestones

# Work Breakdown Structure




Source: https://www.archimetric.com/faq-items/project-management-work-breakdown-structure-project-management/

# Scheduling

- Manpower planning and material requirement for each stage.
- Expected start and end dates of each activity.
- Sequential relationship among the activities.
- Using scheduling, you can:
  - Predict completion time
  - Control cost and resources
  - Mange changes and uncertainties
  - Use for future references

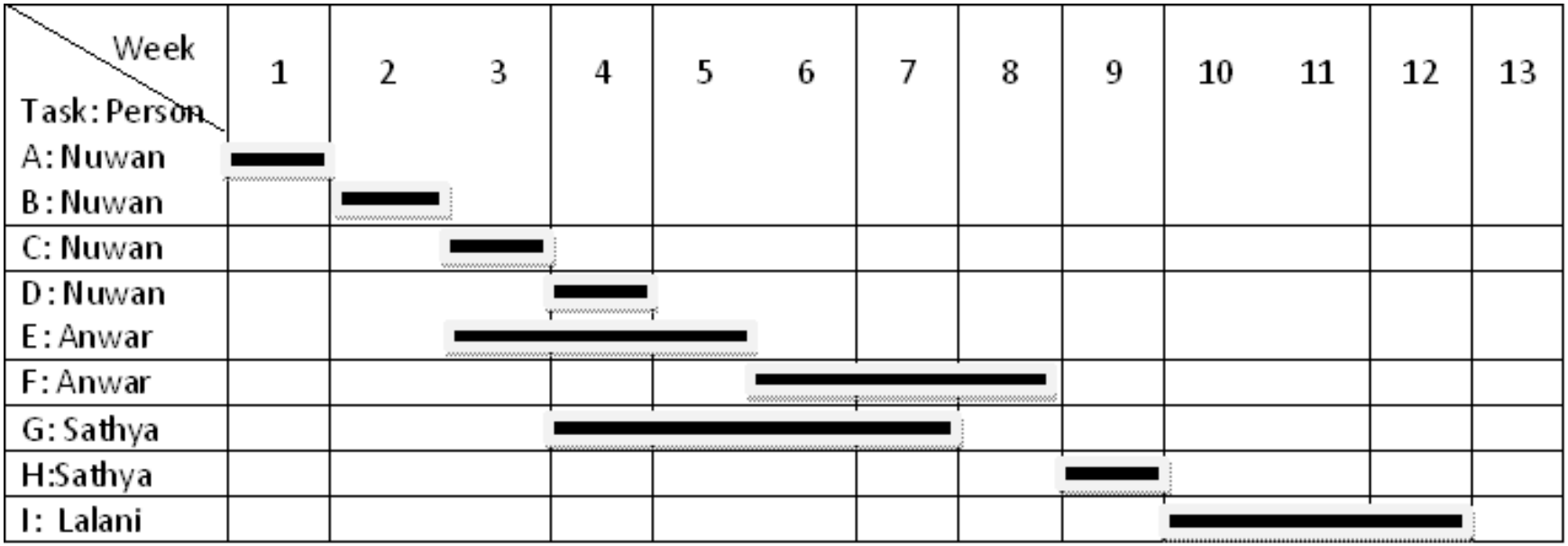
# Tools for project scheduling

- Project schedule shows what work needs to be performed, which resources are required and what is the timeframe given to complete the project.
  - Bar chart (Gantt chart)
  - Critical Path Method (CPM)
  - Project Evaluation and Review Techniques (PERT)

# Gantt Chart

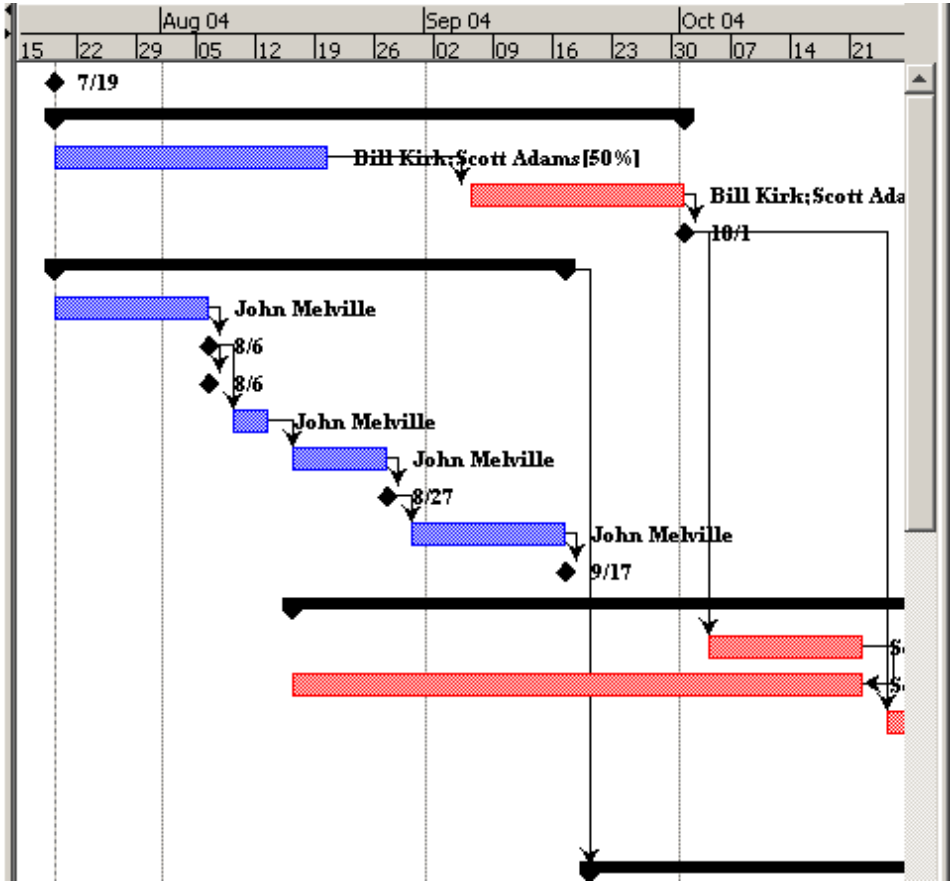
- A bar chart plotted against over time.
- An activity is illustrated by a bar (its length is based on time estimation)
- Depending on the availability of task dependencies and availability of resources, the bars can be parallel or sequential.
- Each bar is drawn at the earliest start date.

# Allocation of staff



# Gantt Chart

| | Name | Duration | Start | |
|---|---|---|---|---|
| 1 | Begin project | 0 days | 7/19/04 8:00 AM | 7/19/ |
| 8 | **Design Phase** | 55 days | **7/19/04 8:00 AM** | **10/1** |
| 2 | Prototype design | 25 days | 7/19/04 8:00 AM | 8/20/ |
| 9 | Test prototype | 20 days | 9/5/04 8:00 AM | 10/1/ |
| 15 | Prototype completed | 0 days | 10/1/04 5:00 PM | 10/1/ |
| 16 | **Finance Phase** | 45 days | **7/19/04 8:00 AM** | **9/17** |
| 3 | Create business plan | 15 days | 7/19/04 8:00 AM | 8/6/0 |
| 10 | Present to current investor | 0 days | 8/6/04 5:00 PM | 8/6/0 |
| 17 | Meet with bankers | 0 days | 8/6/04 5:00 PM | 8/6/0 |
| 22 | Circulate plan w/ venture c | 5 days | 8/9/04 8:00 AM | 8/13/ |
| 28 | Negotiate with venture cap | 10 days | 8/16/04 8:00 AM | 8/27/ |
| 34 | Reach agreement | 0 days | 8/27/04 5:00 PM | 8/27/ |
| 39 | Create legal documentatior | 15 days | 8/30/04 8:00 AM | 9/17/ |
| 42 | Financing closed | 0 days | 9/17/04 5:00 PM | 9/17/ |
| 23 | **Production Phase** | 73 days | **8/16/04 8:00 AM** | **11/2** |
| 4 | Setup assembly line | 15 days | 10/4/04 8:00 AM | 10/2 |
| 11 | Hire assemblers | 50 days | 8/16/04 8:00 AM | 10/2 |
| 18 | Assemble first batch | 3 days | 10/25/04 8:00 AM | 10/2 |
| 24 | Quality testing | 10 days | 10/28/04 8:00 AM | 11/1( |
| 29 | Assemble product | 10 days | 11/11/04 8:00 AM | 11/2 |
| 35 | Inventory available | 0 days | 11/24/04 5:00 PM | 11/2 |
| 30 | **Marketing and Sales Pha** | 30 days | **9/20/04 8:00 AM** | **10/2** |



# Critical Path Method (CPM)

- For project with a large number of activities, a bar chart is not effective.
- this method is easier to illustrate activities of complex projects.
- Critical path indicates the longest path in a CPM network.
- Time required to traverse in the critical path is the project duration. There can be more than one critical path.
- The activities lie on a critical path are critical activities. It might require resources prior to other activities.
- Shows float time for each activity.

# Project Evaluation and Review Techniques (PERT)

- Suitable to projects with uncertain duration and R&D projects (doing for the first time).
- Uses three estimates of duration.
  - optimistic time estimate ($t_0$) – shortest possible time
  - Pessimistic time estimate ($t_p$) – maximum time required to complete an activity (worst situation)
  - Mot probable time estimate ($t_m$)- time required under normal circumstance

$$t_e=(t_0+4\ t_m+t_p)/6$$