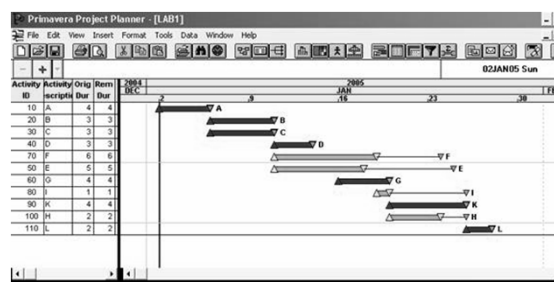


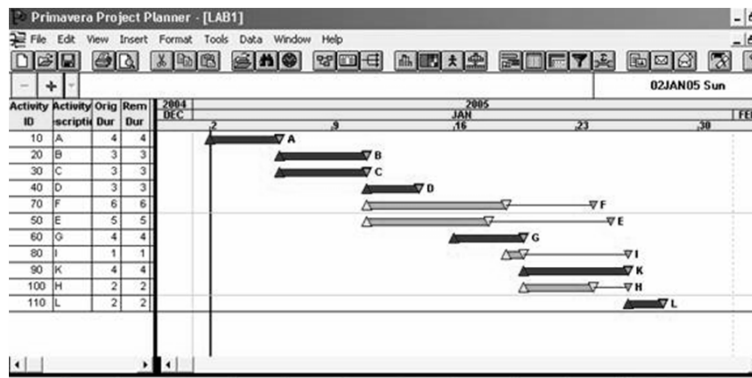
# Bar Charts (Gantt Charts), Resource Histograms, and S-Curves

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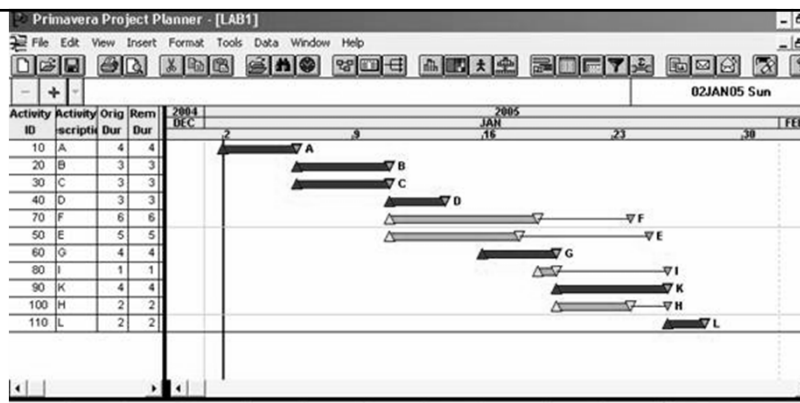
## Bar charts (Gantt charts)



- Like we said before, bar charts are the oldest scheduling technique
- Found by Henry Gantt



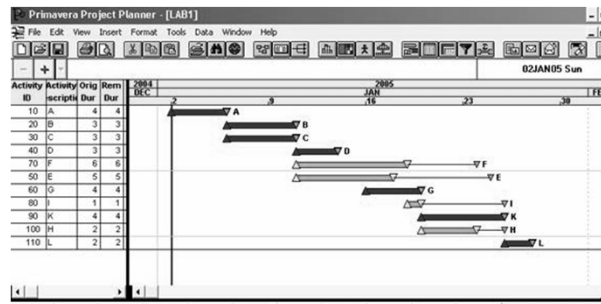
- Consists of horizontal bars and a time scale
- Each bar represents an activity, with the bar length represents its duration



- In addition to the activity bars and the time scale, most bar charts contain data in columns
- Information may include: durations, resources, costs, other (customized)
- Note that activities in this bar chart example are ordered in their ES

## Advantages of bar charts

- Easily constructed for small or simple projects
- Reviewers of the bar chart do not need any special knowledge to understand:
  - The status of the project
  - What is expected to be accomplished in the next few time periods
  - When the project is expected to end



- **Disadvantages:**
- Do not typically show logic (logic is not obvious)
- For example, determine the dependency of F&E

## Example 1

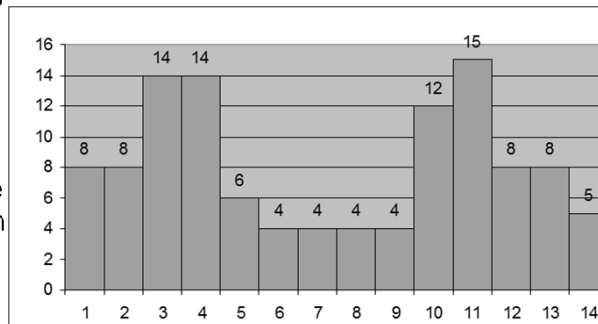
## Histograms and s-curves

- Histograms are period representation of resource needs or use
- S-curves (cumulative curves) show the same information on an accumulated basis
- Resources that are usually shown in histograms and s-curves include: number of labor, labor hours, dollars

## Bar chart and histogram

ID	Desc	Dur	Total Resources	Day															
				1	2	3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14		
10	A	4	32	8	8	8	8												
20	B	3	6			2	2	2											
30	C	7	28			4	4	4	4	4	4	4							
40	D	2	14										7	7					
50	E	5	25										5	5	5	5	5		
60	F	3	9												3	3	3		
Periodsum				8	8	14	14	6	4	4	4	4	12	15	8	8	5		
Cumulative sum				8	16	30	44	50	54	58	62	66	78	93	101	109	114		

Although resources need not be allocated uniformly throughout the duration of an activity, the demonstration here is based on uniform distributions of resources



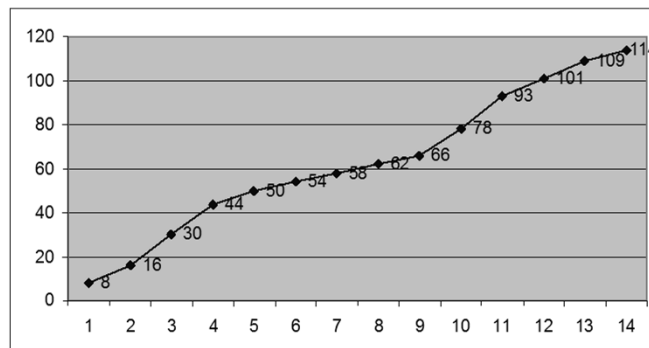
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ID	Desc	Dur	Total Resources	Day															
				1	2	3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14		
10	A	4	32	8	8	8	8												
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40	D	2	14										7	7					
50	E	5	25										5	5	5	5	5		
60	F	3	9												3	3	3		
Periodsum				8	8	14	14	6	4	4	4	4	12	15	8	8	5		
Cumulative sum				8	16	30	44	50	54	58	62	66	78	93	101	109	114		

## S-Curve

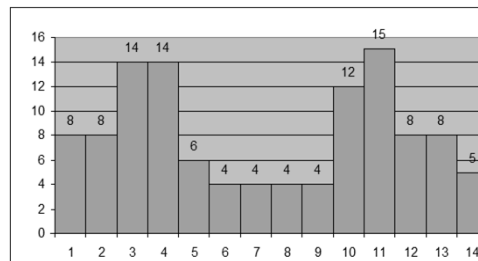


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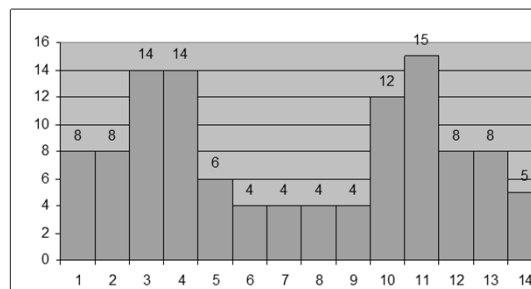
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## Histogram use



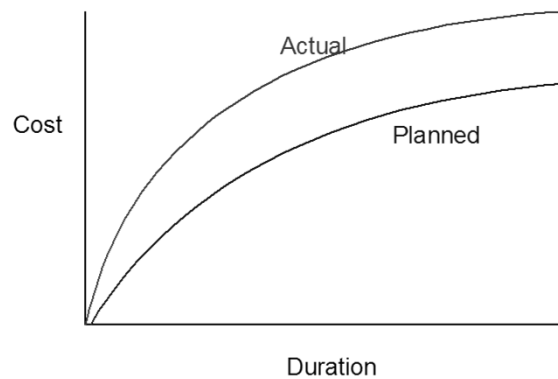
- The histogram helps us to identify periods when resources are being used “**ineffectively**”
- For example, based on the above histogram, we can identify periods of “low-resource” use and periods of “high-resource” use



- The next step for us is to use “resource allocation” or “resource leveling” techniques to improve our resource histogram
- One common technique is called the Minimum Moment Algorithm Approach

## S-curve use

- Used to predict number or size of resources over the life of the project
- Also used to compare planned (budgeted) resources with actual ones



- Plotting both s-curves is used to control, make comparisons, and prepare better forecasts in the future

## Examples 2 & 3