

School of Engineering

PROJECT PLANNING

Refining the plan

Mark Sandford

Last week - planning

Planning is an unnatural process

It is much more fun to do something

The nicest thing about not planning is that failure comes as a complete surprise rather than being preceded by a period of worry and depression.

(John Harvey Jones)

Last Week

- ❖ Planning
 - ❖ What is planning, why plan, 5P's
 - ❖ Project
 - ❖ What is a project ? Collection of tasks
 - ❖ Project objectives/tasks, SMART
 - ❖ Relationship between cost, time, performance/quality
 - ❖ Planning techniques
 - ❖ Work structure breakdown
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Last Week

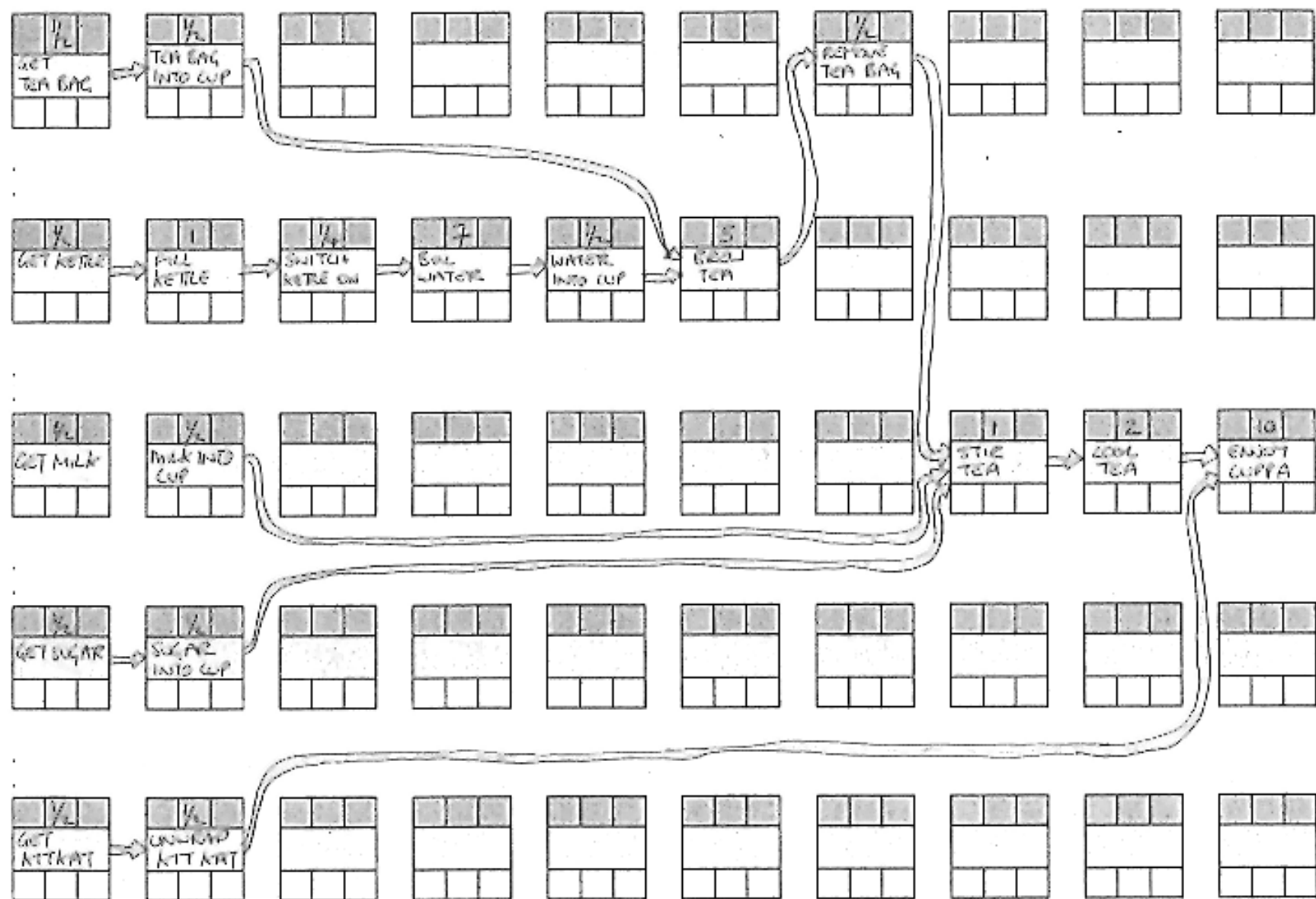
- ❖ Planning chronology
 - ❖ Activity on arrow
 - ❖ Timing project tasks - & estimating duration
 - ❖ Activity on Node
 - ❖ Earliest possible task times
 - ❖ Latest possible task times
 - ❖ Concept of float
 - ❖ Concept of labour/resource levelling
 - ❖ Gantt charts
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NETWORK ANALYSIS

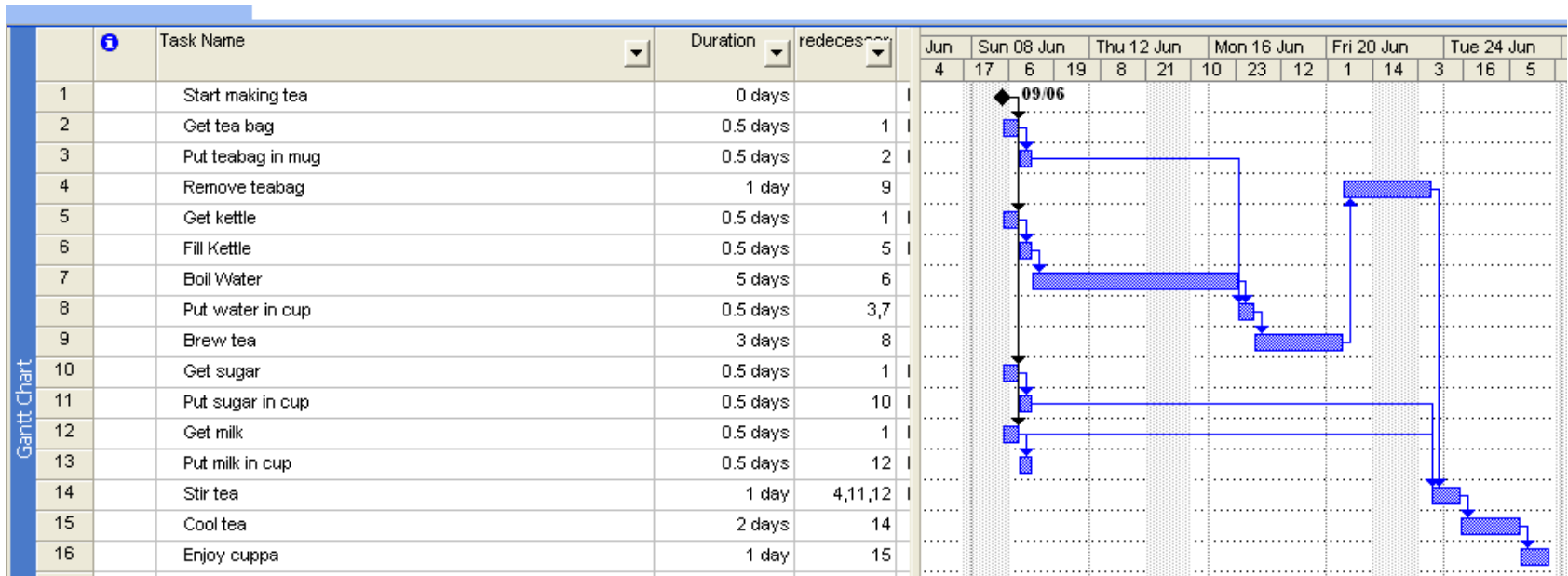
Activity on node - Float

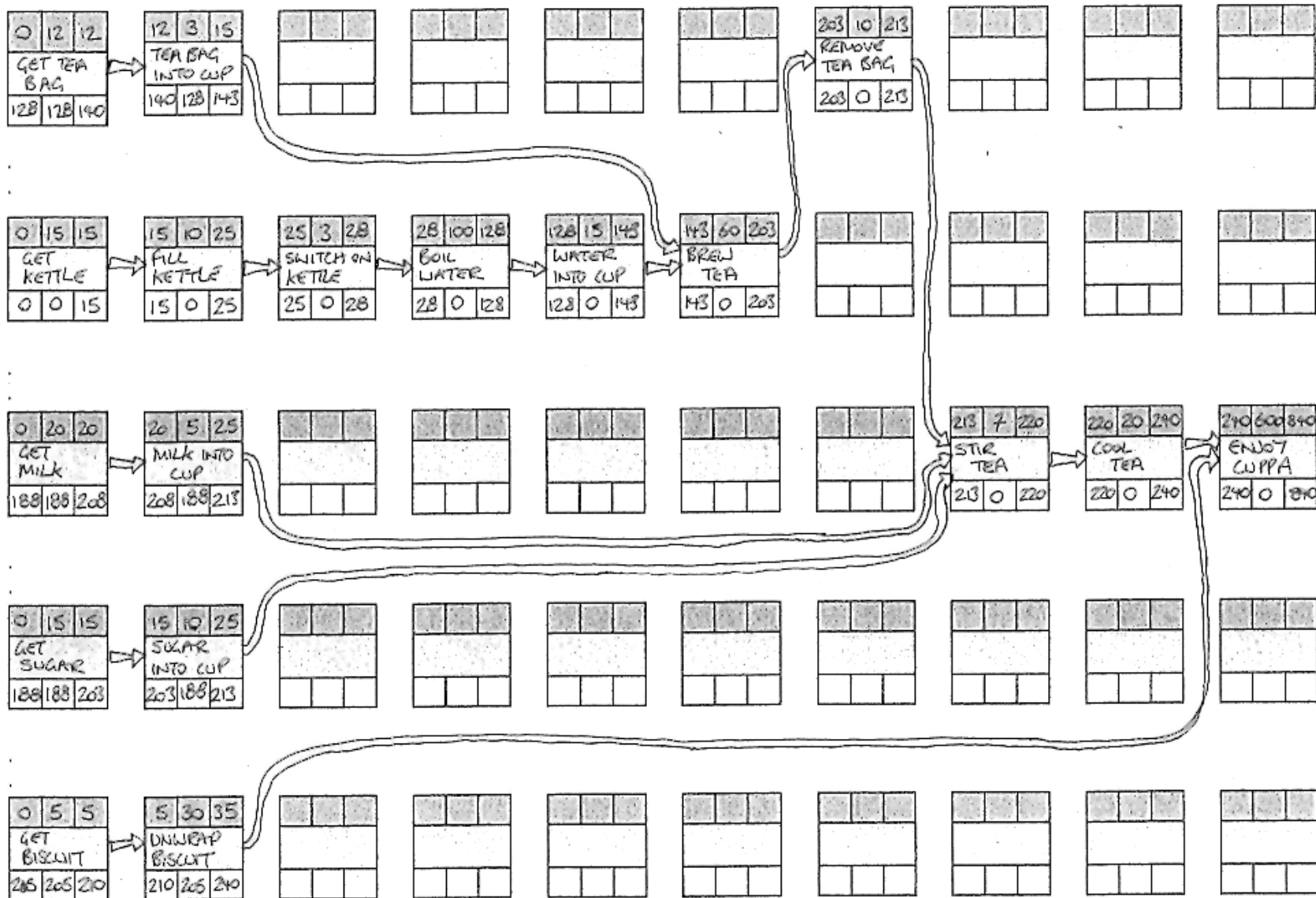
Earliest Start	Duration	Earliest Finish
Activity Title		
Latest Start	Float	Latest Finish

Float = Latest start – Earliest start



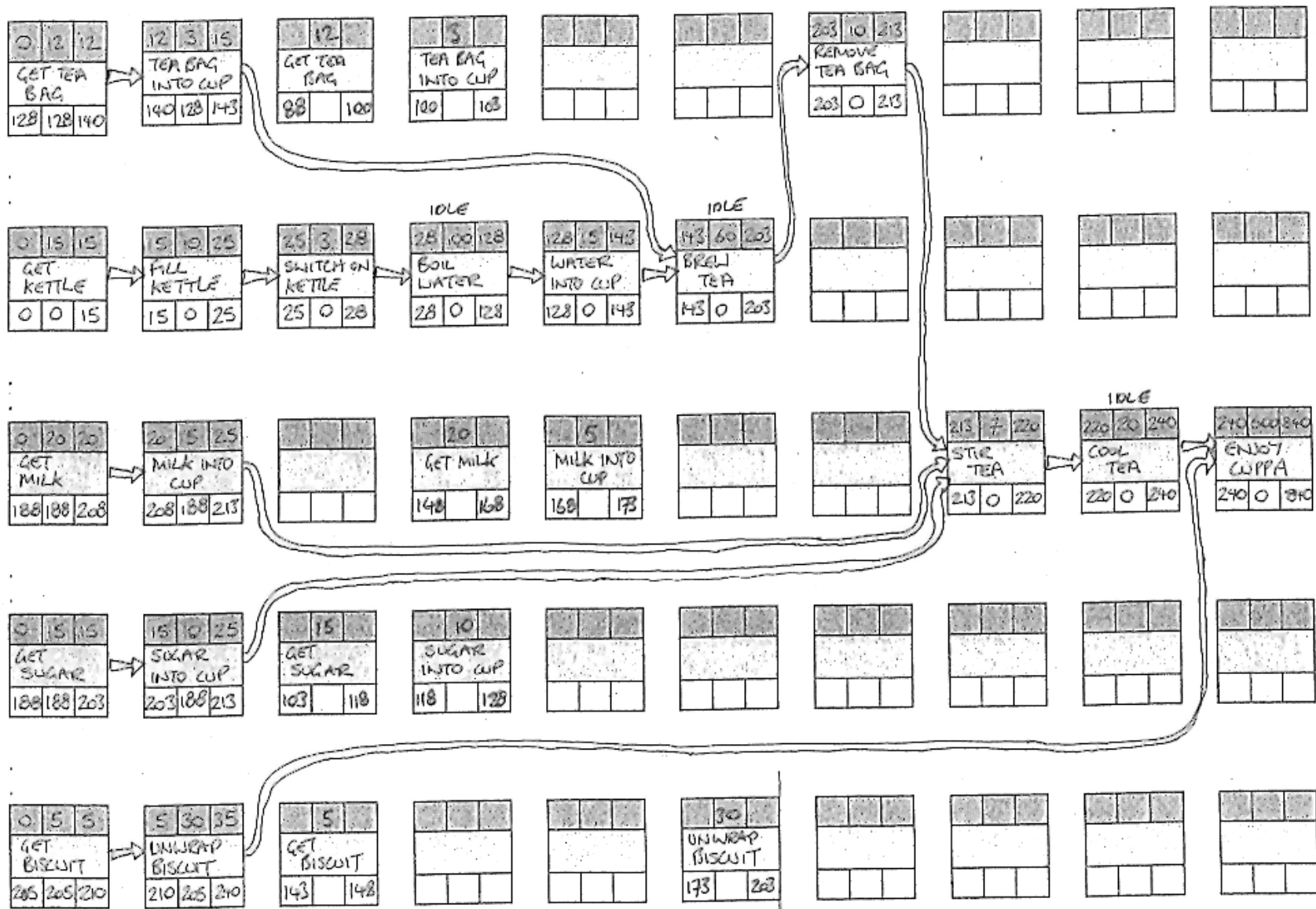
Gantt Chart – cuppa tea (no biscuit)

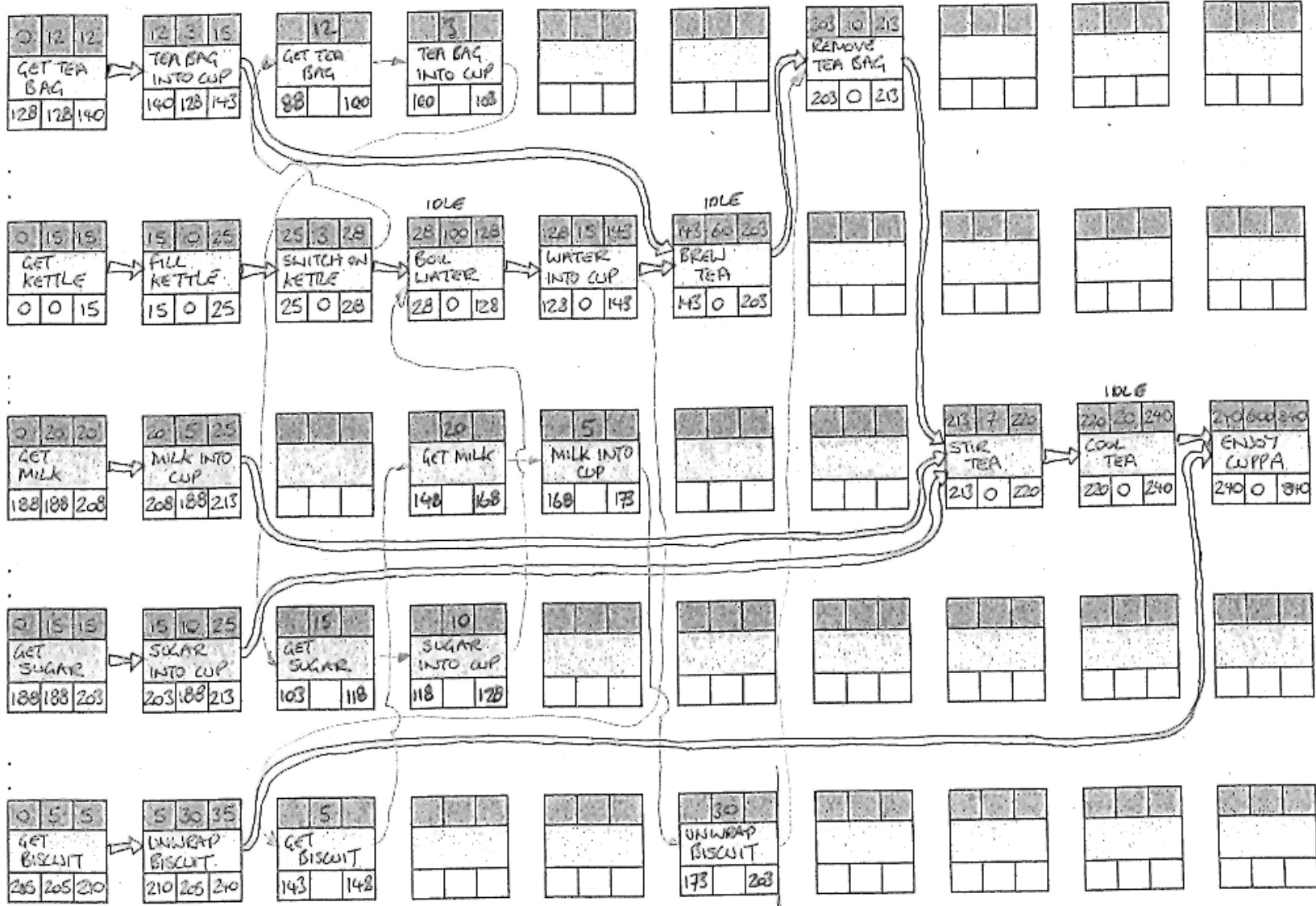


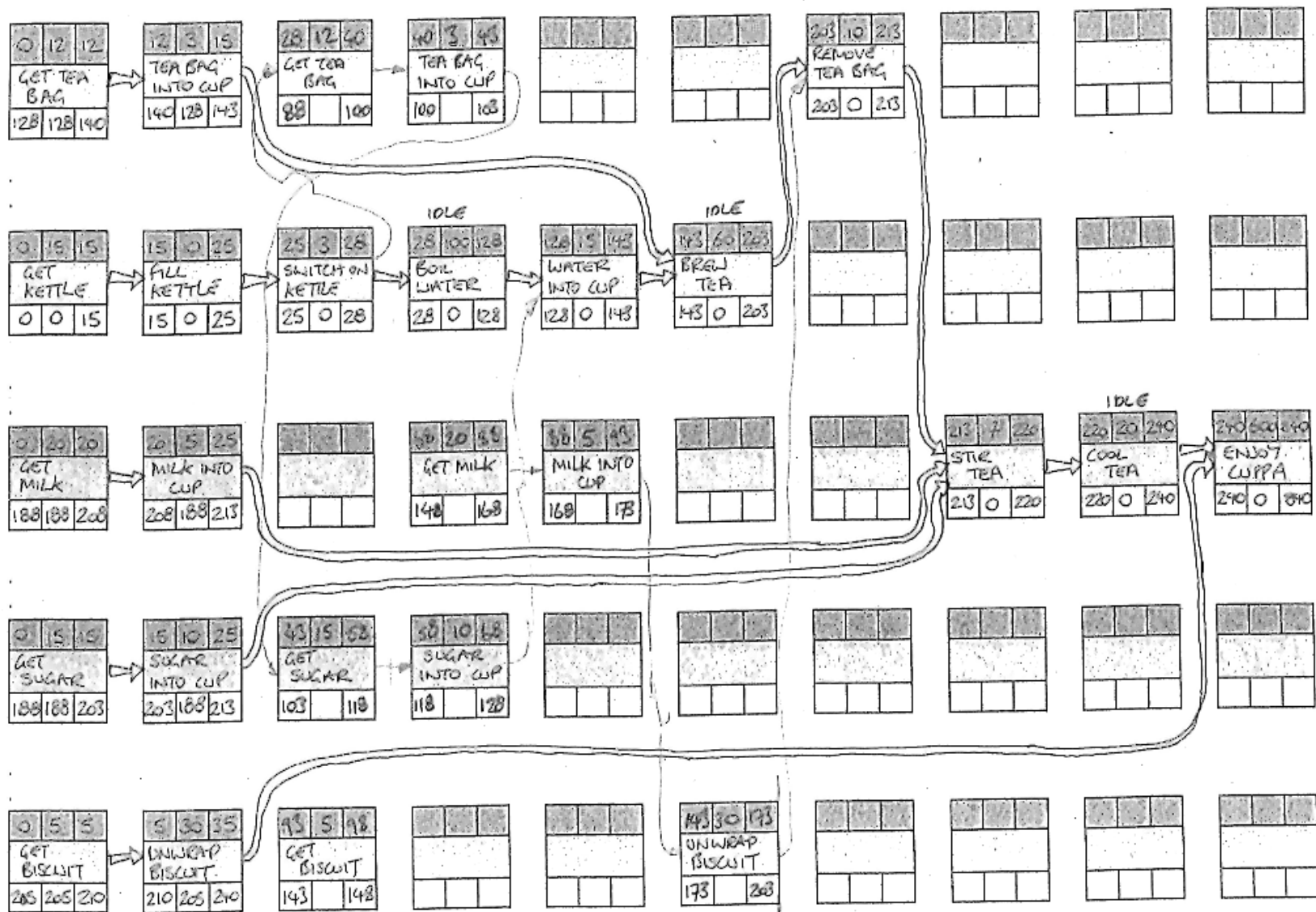


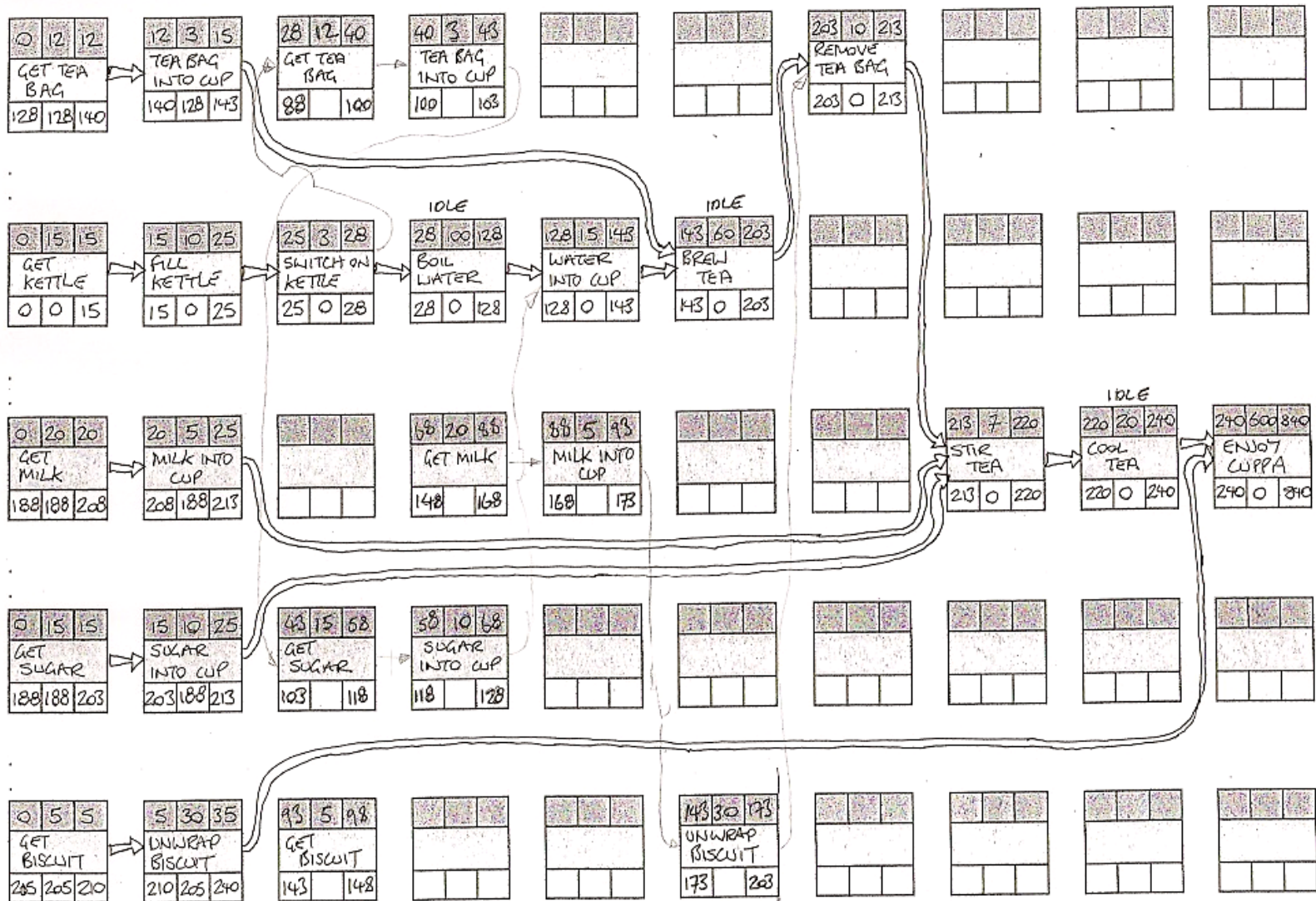
Resource Labour Levelling

- ☐ Identify critical path
 - ☐ Identify 'doing' activities
 - ☐ Identify 'idle' activities
 - ☐ Activities with 'float' can move around and be done while the labour is 'idle'.
 - ☐ Project logic must be retained
 - ☐ Recalculate earliest and latest times, hence find new 'floats'
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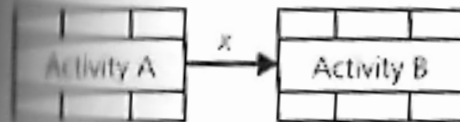




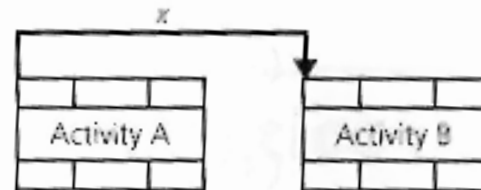




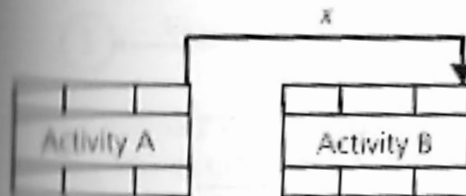
Advanced network notations



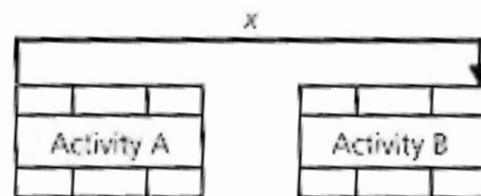
- (a) Finish-to-start. Activity *B* cannot start until x network time units after the finish of Activity *A*. Most constraints are of this type, but x is usually zero.



- (b) Start-to-start. Activity *B* cannot start until x network time units after the start of Activity *A*.



- (c) Finish-to-finish. Activity *B* cannot be finished until x network time units after the finish of Activity *A*.



- (d) Start-to-finish. Activity *B* cannot be finished until x network time units after the start of Activity *A*.

PERT – Programme Evaluation and Review Technique

- Activity Risk Analysis
 - Three estimates required for each activity
 - T (opt) – most optimistic duration
 - T (med) – most likely duration
 - T (pes) – most pessimistic duration
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PERT

□ Standard probable duration

$$\text{Estimated Time} = \frac{T(\text{opt}) + 4T(\text{men}) + T(\text{pes})}{6}$$

PERT

- Skewed (pessimistic) probable duration

$$\text{Estimated Time} = \frac{T(\text{opt}) + 3T(\text{men}) + 2T(\text{pes})}{6}$$

MILESTONES

Milestones are specific and clearly defined events marking significant stages of a project such as:-

- ❖ Stage payments
- ❖ Issuing of reports etc
- ❖ Completion of prototype build
- ❖ Sign-off for production

Estimates of when these events will occur are updated at each review date

MILESTONE CHARTS

MILESTONE CHARTS

- ❖ Provide an effective control method
 - ❖ Relate one update and review to another
 - ❖ Give a summary plan
 - ❖ Show trends in project slippage
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Project Gateways

- ❑ Similar to milestones.
 - ❑ To continue the project the 'gatekeeper' must be satisfied.
 - ❑ Technical targets must be met, including administrative tasks.
 - ❑ Commercial targets must be met.
 - ❑ Rigorous process highlights project problems.
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School of Automotive Engineering

PROJECT PLANNING

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