COSTING

- Fixed Cost: sum of all the costs independent of quantity
- Variable Costs: sum of all the costs that directly depend on the quantity of product
- Total Cost = FC + VC

Marginal Cost

- MC= change in total cost/change in quantity

  = ∆TC/ ∆Q

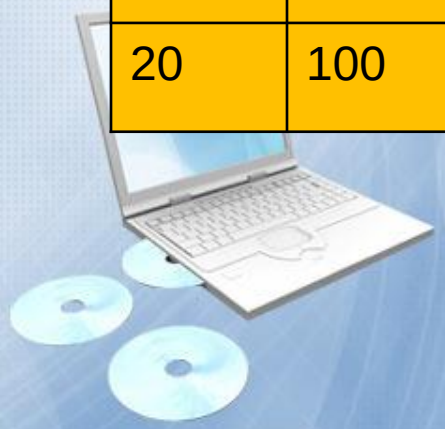
  OR

  MC= increase in total variable cost/ increase in production

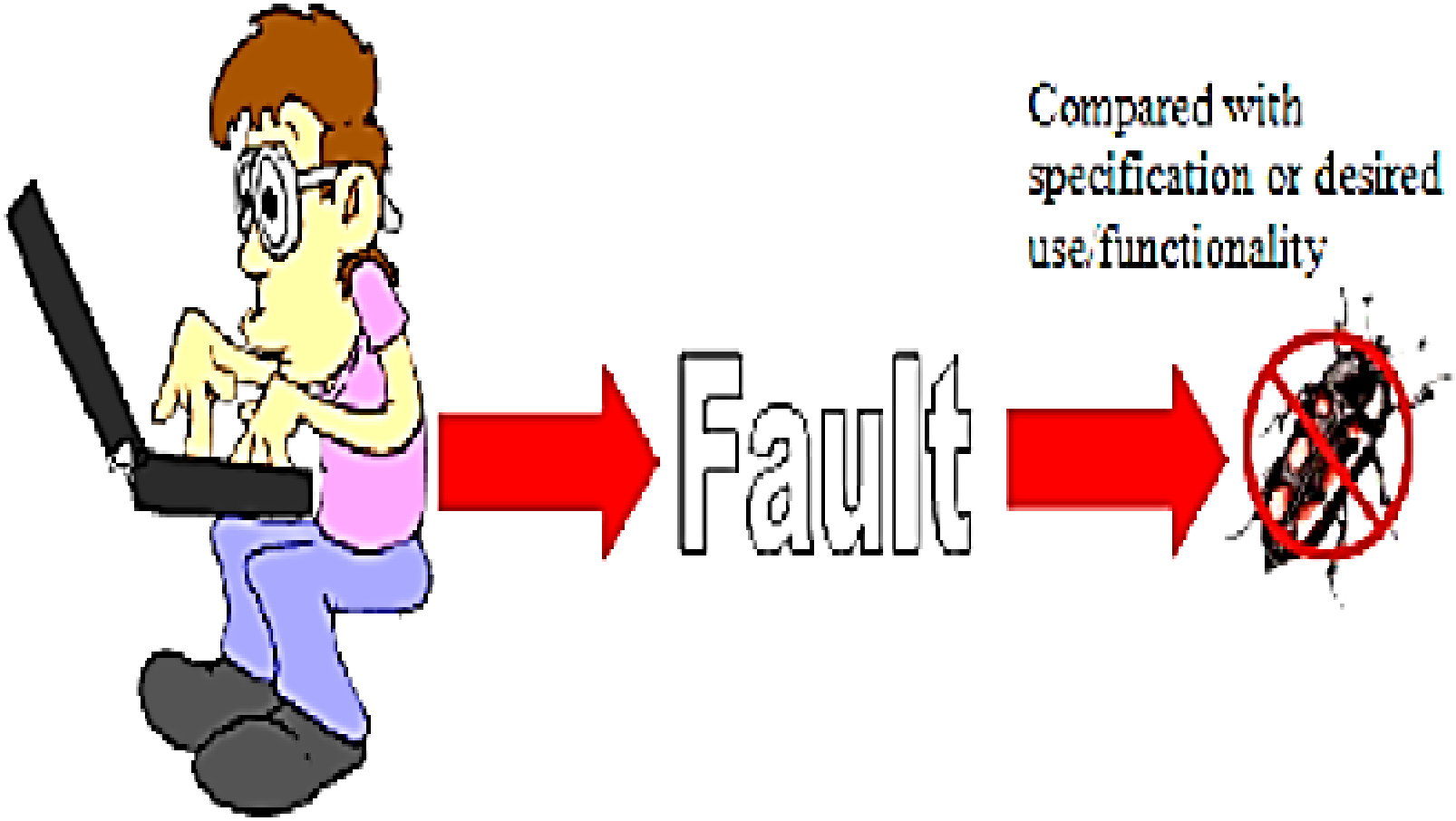
  ∆VC/∆Q

- AFC = Average fixed cost (fixed cost per item)
- AVC= Average variable cost (variable cost per item)
- AC= average cost of each item or cost per item
- ΔQ= change in quantity
- ΔVC= change in variable cost
- ΔTC= change in total cost

Quantity	Fixed cost	Variable cost	Total cost	AFC	AVC	AC	∆Q	∆VC	∆TC	MC
1	100	20	120	100	20	120	-	-	-	-
2	100	40	140	50	20	70	1	20	20	20
5	100	100	200	20	20	40	3	60	60	20
10	100	200	300	10	20	30	5	100	100	20
20	100	400	500	5	20	25	10	200	200	20



In terms of Software Engineering, there are few other costs as well, that must be considered



A programmer makes a **mistake**.

The mistake manifests itself as a **fault**[1] [or defect] in the program.

A **failure** is observed if the fault [or defect] is made visible. Other faults remain **latent** in the code until they are observed (if ever).

The Cost of Quality

"Cost of quality is the expense of noncomformance – the cost of doing things wrong."

Crosby, P. 1979, Quality is Free, McGraw-Hill, Toronto

- Understand quality costs enables you to
  - Understand hidden costs
  - Reduce and eliminate unnecessary cost
- Prevent problems from happening
- COQ= Failure cost + appraisal cost + prevention cost

The Cost of Quality

- Failure cost:

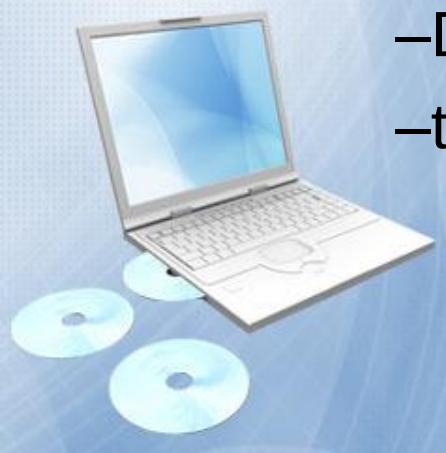
  diagnosing failure, repair, going back to operation

- Appraisal cost:

  Cost of evaluating the product for quality, finding faults causing failures

  –Design and code reviews

  –testing



The Cost of Quality

- Prevention Cost:

  Cost associated to finding causes of defects and actions taken to prevent them in future

  – Causual analysis, process improvement

  – Pair programming, test driven development

One way of calculating cost for software is by

- Finding per hour rate
  - Per hour rate including profit
  - Per hour rate with cost only and profit is added lately with each project
- CoQ can be added for each project differently depending on the expenses for their quality