18TT

$\underline{Q_1}$ Number of Defects :- 10, 20, 15, 18, 22

$$\text{Mean } \bar{x} = \frac{10+20+15+18+22}{5} = \frac{85}{5} = 17$$

x_i	Deviation $\lvert x_i - \bar{x} \rvert$	$(x_i - \bar{x})^2$
10 →	7 →	49
20 →	3 →	9
15 →	2 →	4
18 →	1 →	1
22 →	5 →	25
		88

$$\Sigma \text{Deviation}^2 = 88$$

$$\therefore \text{Variance} = \frac{\Sigma \text{Deviation}^2}{N =} = \frac{88}{5} = 17.6$$

$$\therefore \text{S.D} = \sqrt{\text{Variance}} = 4.195$$

$$\therefore \text{I.D} = \frac{\text{S.D}}{\text{mean}} = \frac{4.195}{17} = 0.247$$

18 final

Q Explain why it is wrong to assert that line of code is bad measure

Ans:-

logical lines	logical lins with comment
X	✓
but it has better if we measure based on LOC	~~less~~ more documentation, reliable, maintainable

18 final

Q Explain why the duration of process is measurable on a ratio scale. Give some example measures and admissible transformation that can relate them

(1) Absolute zero point

(2) Equal Interval

(3) Ratio are meaningful
to say one value is twice as much as another

(4) Satisfy all arithmatic operation

measures of process duration

① Time in second, minute, hour

② cycle time in manufacturing

④ project completion time

— o —

18 Final

True | False :- For a normal distribution, one σ (one standard deviation above and below mean) includes 80% of population.

→ False : 68% not 80%.

— o —

18 Final

Q : what is death march?

→ refers to a project that is in critical section

18 final

Q Systematic errors change the variance but not the mean. Do yo agree?

→ No. Systematic errors / bias affect ~~both~~ ~~variance~~, mean.

will deviate from true value by a fixed amount

not variance

is a measure ~~ment~~ of spread or dispersion of data points around mean

all all measure affect similarly

the variance remains unchanged

18Final

Q. once you have defined an effective metrices program for your organization, How Frequently you should change it?

→ you should change it when

1. Goal/strategy changes
2. Project process changes
3. Feedback
4. Tools/Technology change

18Final

Q. Show that mean can be used as a measure of central tendency. in interval scale.

Interval scale → maintain interval between points
→ satisfy Addition OPERation

→ Balancing property satisfy mean

Q suppose that the attribute "complexity" of software modules is ranked as a whole number between 1 to 5.

1 = trivial
2 = simple
3 = moderate
4 = complex
5 = incomprehensible

Q → what type of scale for complexity

Ordinal scale

Q → For this scale is mean is a meaning full measure ?

For ordinal scale ; Mean X

→ order ranking
→ No interval
→ dont statisy arithmatic operation
→ goal is categorize in order manner with little comparison

18 Final

average

Input = 3 × 4 = 12

Output = 1 × 5 = 5

Database = 1 × 10 = 10

∴ UFP_S = 12+5+10 = 27

∴ Given,

Technical complexity factor = 2

∴ AFP = factor * UFPS

= 2×27

= 54

∴ LOC = AFP * Java Gearing factor

= 54 × 80

= 4320 Lines of code

function points

Pros

1. Technologically Independent
2. effective in early phase of software life cycle
3. well documented and specified
4. supported by standards and International groups
5. reliable + accurate
6. ~~sust~~ substantial data + support the methodology

cons

1. so many steps
2. No tools for count function point automatically
3. semaintically difficult
4. significant subjectivty in adjustment factor
5. Significant effort is required to become a certified functiont point counter

7. useful in negoations

8. help understanding the source of effort

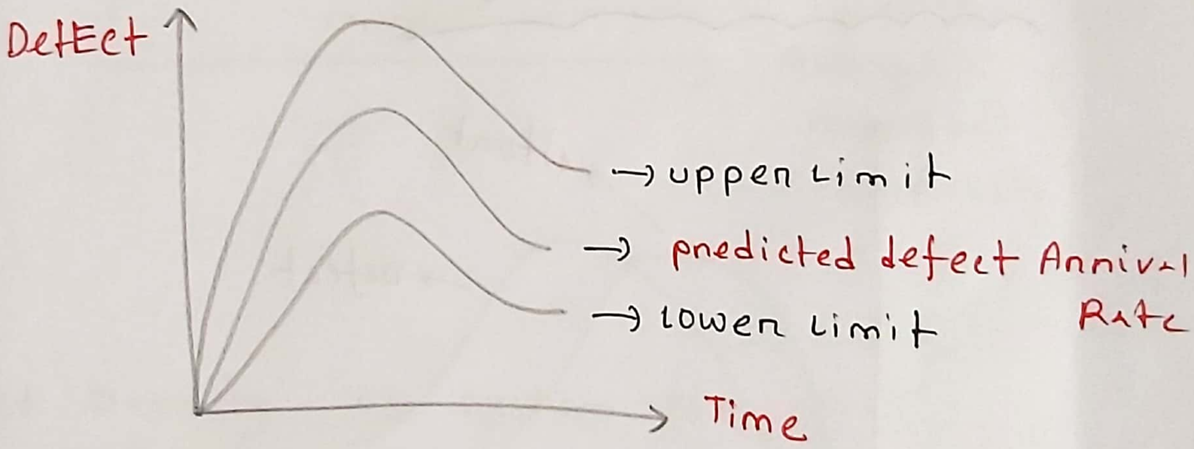
chapter-7

mean-time-between-failure = MTBF

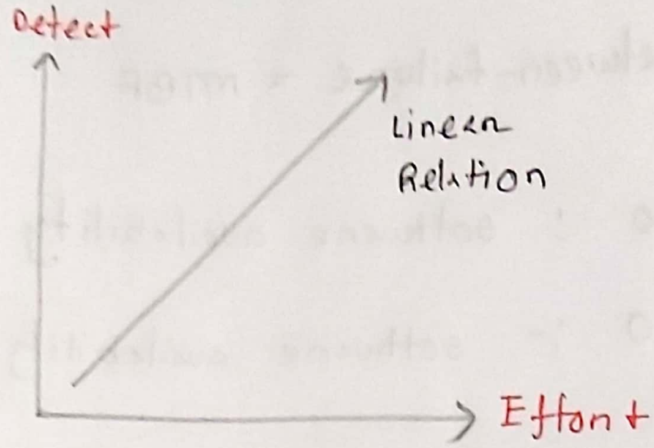
MTBF = ∞ : software availability => 100%

MTBF = 0 :- software availability => 0%

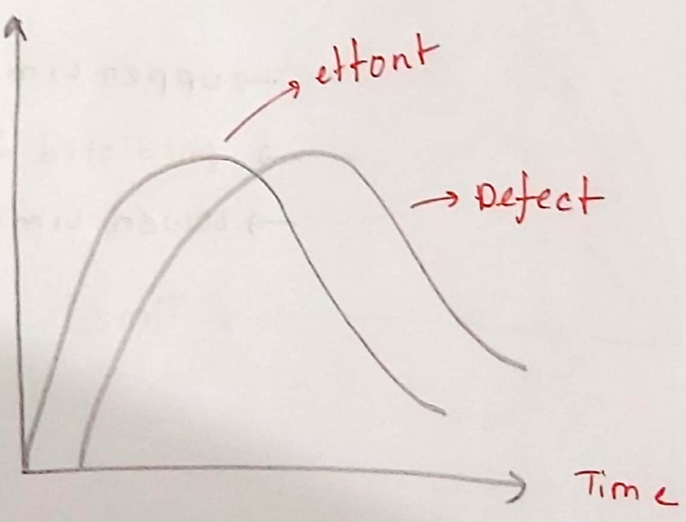
Defect versus Arrival Rate



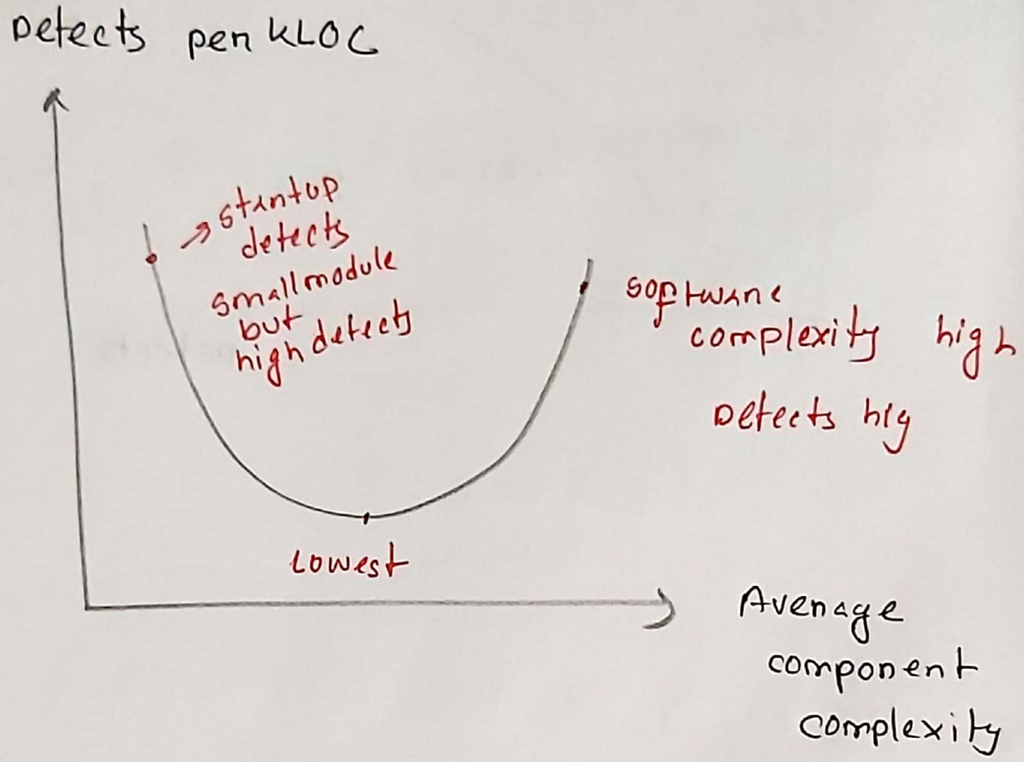
Defect versue effort



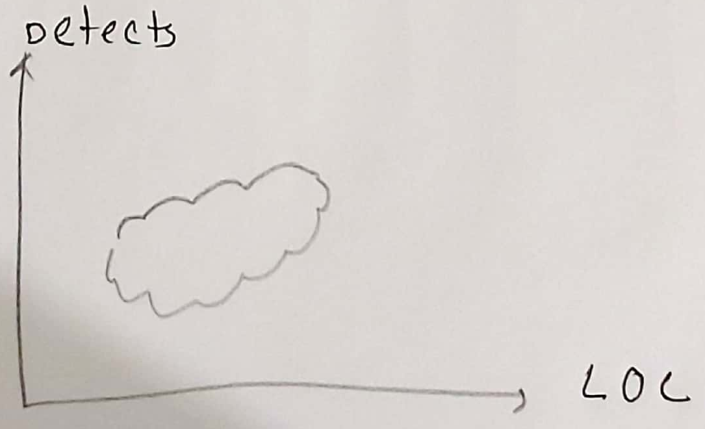
Defect versue staffing



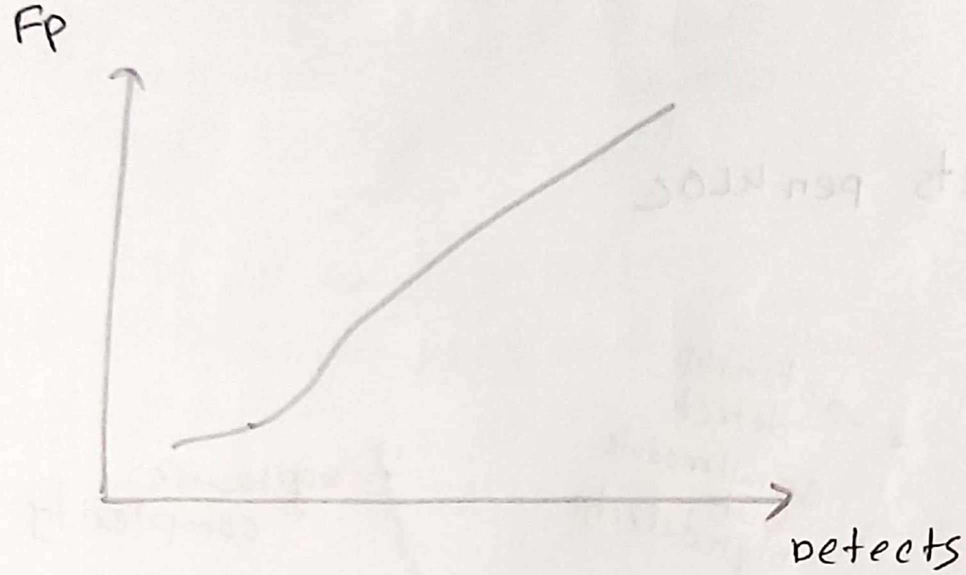
Relationship between Defect density and complexity of software moduele :-



Detect Density vs system size
(DD)



Defect versue Function point



exponential distribution model

PDF, $f(t) = m(t/c)^m \cdot e^{(-t/c)^m}/t$

CDF, $F(t) = 1 - e^{-(t/c)^m}$

Rayleigh Model

cumulative Distribution function, $F(t) = K\left[1 - e^{-(1/2t_m^2)t^2}\right]$

Probability Distribution function, $f(t) = K\left[\left(\frac{1}{t_m}\right)^2 t * e^{-(1/2t_m^2)t^2}\right]$

K = total number of Defects

t_m = is the time $f(t)$ maximum

— o —

40%

week NO	1	2	3	4	5	6	7	8	9
Defects found	20	41	48	52	62	59	52	44	33

Total detect , $K = 557$

$t_m = 5$ (cause 40%. detect appear by t_m week)

∴ equation of defects

$$F(t) = 557\left(1 - e^{-(1/2\times 25)t^2}\right)$$

$$f(t) = 557\left(\left(\frac{1}{5}\right)^2 \times t \times e^{-(1/2\times 25)\times t^2}\right)$$

Q Assume a Raeigh curve

month	1	2	3	4	5	6
detects	13	22	35	22	17	5

(i) Detect predict equation

$$f(t) = K * \left[2(t/c^2)\, e^{-(t/c))^2} \right]$$

$$\boxed{c = \sqrt{2}\, tm}$$

$$F(t) = K\left(1 - e^{(t/c^2)}\right)$$

$\therefore$ $K = 1$.

$tm = 3$

K = total detects by tm * $\frac{100}{40}$

$= \frac{(13+22+35 \times 100}{40}$

(1) →

(11) →

neauuinement
→ neview
→ design neview
→ testing
→ customen detected

steps

DetEct Removal Efficiency

→ is a key metnic that is used fon measuning and benchmanking the effectiveness of the pnocess as well as measuning the quality of pnojec

$$DRE = \frac{E}{E+D}$$

E → number of defects found befone delivery to end usen

D → Defect found aften delivery

if end of month 3

$$= \frac{13+22+25}{13+22+25+22+17+5}$$

$= 57.7\%$.