SE Module 4

DSQI: -

First Following Factor are checked and calculate their values:

- **s1** = the total number of modules defined in the program architecture.
- **s2** = the number of modules whose correct function depends on the source of data input or that produce data to be used.
- **s3** = the number of modules whose correct function depends on prior processing.
- **s4** = the number of database items (includes data objects and all attributes that define objects).
- **s5** = the total number of unique database items.
- **s6** = the number of database segments (different records or individual objects).
- **s7** = the number of modules with a single entry and exit (exception processing is not considered to be a multiple exit).

Once values ***s1*** through ***s7*** are determined for a computer program, the following intermediate values can be computed:

Program structure: D_1, where D_1 is defined as follows:

- If the architectural design was developed using a distinct method (e.g., data flow-oriented design or object-oriented design), then D1 = 1, otherwise D1 = 0.

- Module independence: $D_2 = 1$ - **(s2/s1)**
- Modules not dependent on prior processing: $D_3 = 1$ - **(s3/s1)**
- Database size: $D_4 = 1$ - **(s5/s4)**
- Database compartmentalization: $D_5 = 1$ - **(s6/s4)**
- Module entrance/exit characteristic: $D_6 = 1$ - **(s7/s1)**

With these intermediate values determined, the DSQI is computed in the following manner:

$$\mathbf{DSQI = SUM(w_i D_i)}$$

where i = 1 to 6, w_i is the relative weighting of the importance of each of the intermediate values,and

S w_i = 1 (if all D_i are weighted equally, then w_i = 0.167).

1) A major information system has 1140 modules. There are 96 modules that perform control and coordination functions and 490 modules whose function depends on prior processing. The system processes approximately 220 data objects that each have an average of three attributes. There are 140 unique database items and 90 different database segments. Finally, 600 modules have a single entry and exit points. Compute the DSQI for this system which was developed using a distinct method.

Solution :

- s1 = 1140
- s2 = 96
- s3 = 490
- s4 = 220
- s5 = 140
- s6 = 90
- s7 = 600

Step 1: Calculate Intermediate Values

- D1 = 1
- Module independence: D_2 = 1 - **(s2/s1)** = 1 – 0.084 = 0.916
- Modules not dependent on prior processing: D_3 = 1 - **(s3/s1)** = 1- 0.429 = 0.571
- Database size: D_4 = 1 - **(s5/s4)** = 1- 0.636 = 0.364
- Database compartmentalization: D_5 = 1 - **(s6/s4)** = 1 - 0.409 = 0.591
- Module entrance/exit characteristic: D_6 = 1 - **(s7/s1)** = 1- 0.526 = 0.474

Step 2: Calculate DSQI : Assuming Equal Weights (W_i = 0.167 for each D_i)

DSQI = 0.167 X (1 + 0.916 + 0.571 + 0.364 + 0.591 + 0.474)

= 0.167 X 3.916

= 0.653

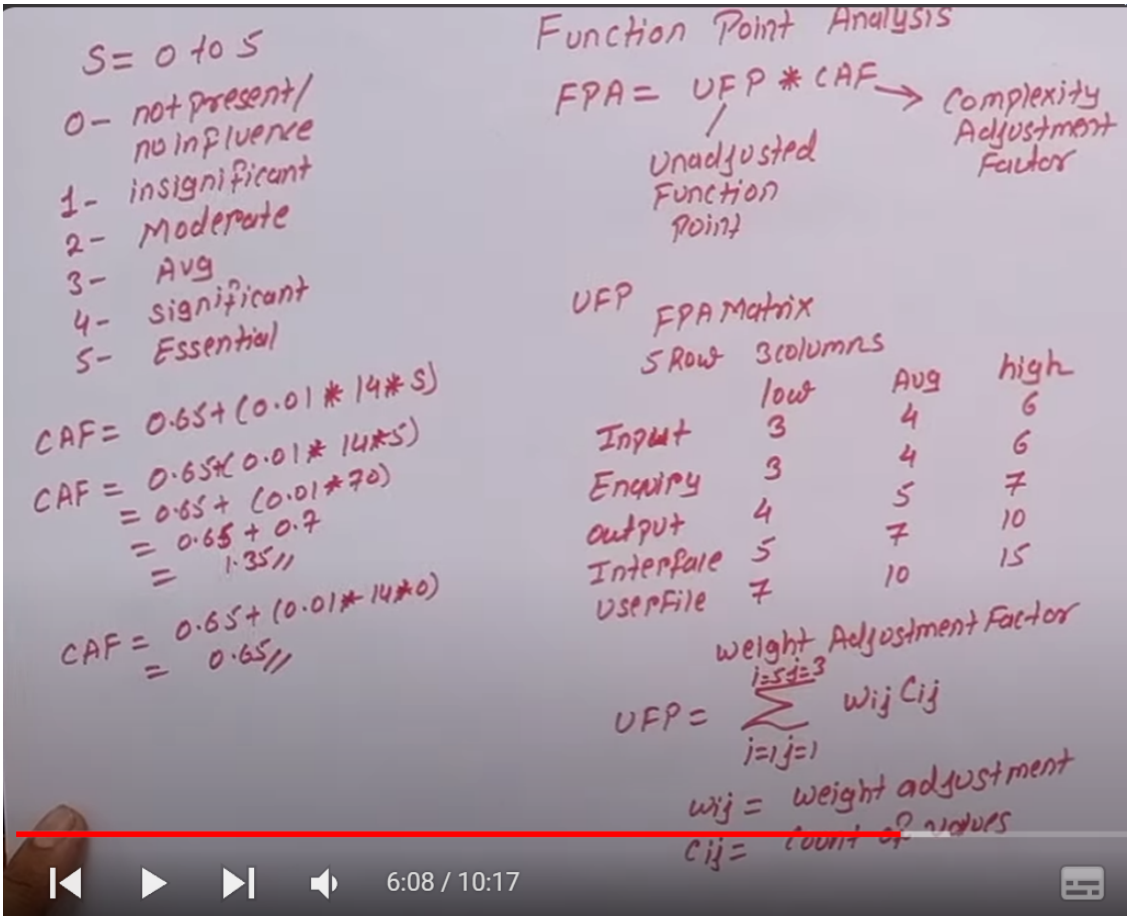
Ranges: -

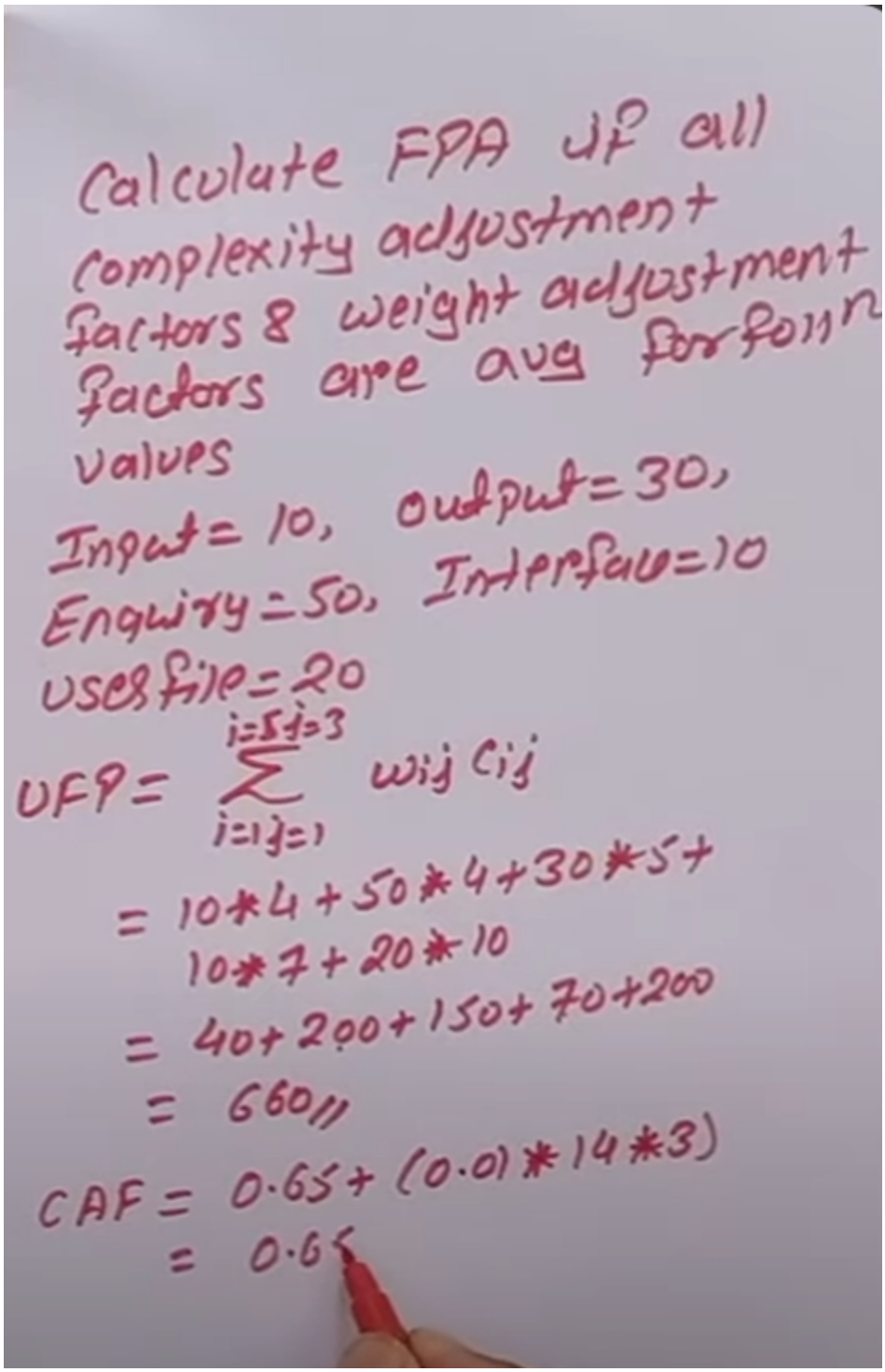
High DSQI : 1 - 0.75

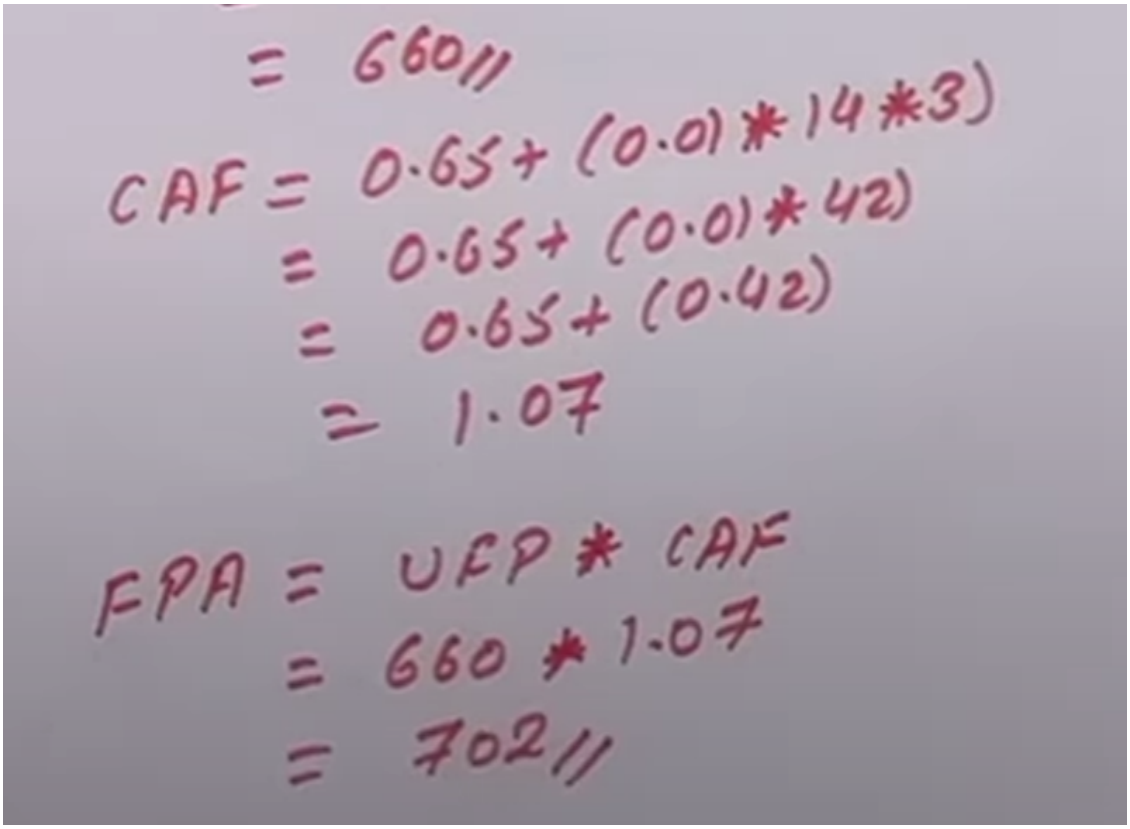
Moderate DSQI : 0.75 - 0.5

Low DSQI : <0.5

FPA




Calculate FPA if all complexity adjustment factors & weight adjustment factors are avg for following values
Input = 10, output = 30,
Enquiry = 50, Interface = 10
usesfile = 20
UFP = $\sum_{i=1 j=1}^{i=5 j=3}$ wij Cij
= 10*4 + 50*4 + 30*5 + 10*7 + 20*10
= 40 + 200 + 150 + 70 + 200
= 660//
CAF = 0.65 + (0.01 * 14 * 3)
= 0.65


= 660//
CAF = 0.65 + (0.01 * 14 * 3)
= 0.65 + (0.01 * 42)
= 0.65 + (0.42)
= 1.07
FPA = UFP * CAF
= 660 * 1.07
= 702//