SE 3002 FAST NUCES Ms. Javeria Sadiq

Roll No:_____ Name:_____

Solution

Quiz 1

Weight : 2%

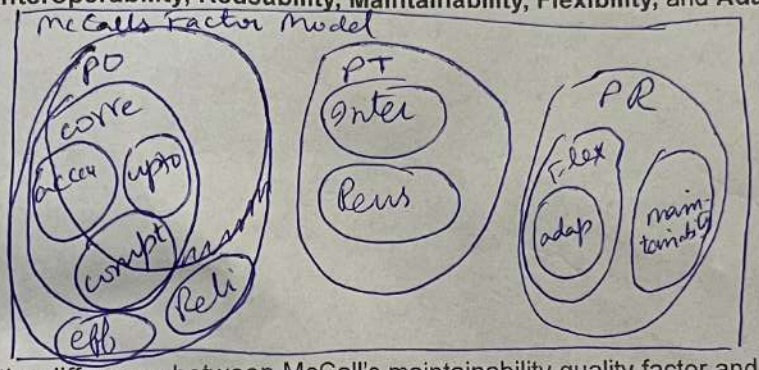
Time: 15 min

Q1. How can a software project that satisfies all of its explicit and implicit functional nonfunctional requirements still be considered a bad quality project?

Managerial Reqt's
- Budget
- Schedule

→ should be satisfied as well.

Q2. Create a Venn diagram to illustrate the relationships between the following categories **McCall's factor model, Product Operation, Product Transition, and Product Revision, Correctness, Accuracy, Uptodateness, Completeness, Reliability, Efficiency, Interoperability, Reusability, Maintainability, Flexibility,** and **Adaptive Flexibility.**



Q3. What is the difference between McCall's maintainability quality factor and flexibility quality factor?

Maintainability → Corrective maintenance (done in result of Bug report)

Flexibility { adaptive, Functionality enhancement, perfective

Q4. Which two different types of reusability requirements are captured by McCall's reusability quality factor?

Development with Reusability

Development for Reusability

Javeria Sadiq

FAST-NUCES Lahore

Name _____

Roll No _____

Quiz 6
Weightage 2%

A software house, *TechPro Solutions*, was tasked with developing a comprehensive inventory management system for a client. The project manager decided to use the Function Point (FP) Method to estimate the project's size and effort. The teams followed the three stages of the FP method:

Stage 1: Compute Crude Function Points (CFP):

Crude Function Points (CFP): 200

Stage 2: Compute the Relative Complexity Adjustment Factor (RCAF):

The teams assessed the complexity characteristics of the software system, assigning grades (0 to 5) to the 14 factors influencing development efforts. However, one team calculated and reported an RCAF value of 97.

Stage 3: Compute Function Points (FP):

The team used the formula:

$FP=200\times(0.65+0.01\times97)$

Q1-Determine if this scenario is valid or not. Explain your reasoning.(1 mark)

Q2-Process metrics are primarily focused on:(0.5 marks)

a) Software maintenance
b) Software usability
c) Software development process
d) Software deployment

Q3-Which of the following is related to process metrics?(0.5 marks)

a) Testing phase effectiveness
b) Maintainability of software
c) Code readability
d) Defect density during usage

Ro[redacted] Name [redacted]

Quiz 1

Weight: 2%

Q1. Which requirements must be met to assure the quality of professional software?

Testing must be met in SDLC, to insure the quality of Software. It is said that skipping one day of testing at start of development can add 2 to 3 days of delay at the end of it.

Q2. Why do some faults do not result in failures?

Some faults / bugs don't result in failure because these are found and fixed during Quality Assurance process. Faults only turn into failure upon execution. If found before it, there are fixed.

Q3. Suppose two fitness-related mobile apps – App A and App B – offer the same features. Both apps also use the same amount of memory i.e. 2 MB. However, App A uses 30% of the latest Qualcomm Snapdragon 8 Gen 2 CPU while App B uses 25%. Which mobile app is more efficient? Why?

Application B is more efficient, as it completes all the same functions with less instructions execution. Less instructions are executed by CPU thus it uses less resources & is more efficient.

Q4. For text-based data entry, why does using a drop-down list instead of a text box usually improve usability?

Because a drop-down gives all the options that the user has to him. So, instead of user wasting effort, he can easily select the necessary option & not worry about option being un-available. In text based, the user would have to change text after making a mistake (spelling) or finding that the option wasn't available.

recall recognition

Name Asad Shafiq

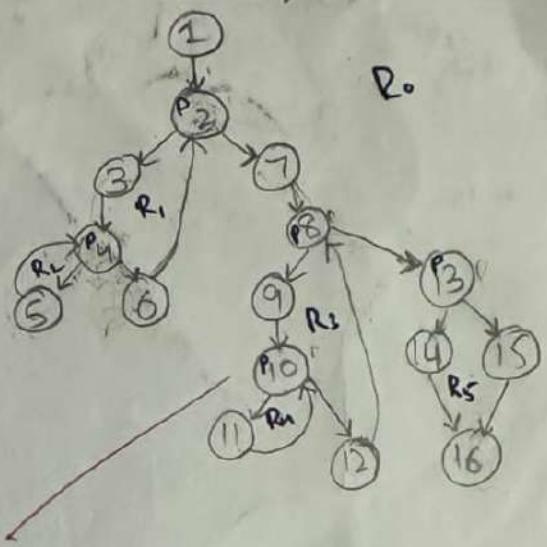
Quiz 4

Weight: 2%; CLO 3

left true , right false

```
int main ()
{
  int m, n, i, j, A[10][10];

  cout << "Enter the number of rows and columns: ";

  cin >> m >> n;

  cout << "Enter the array elements: ";

  for (i = 0; i < m; i++)
    for (j = 0; j < n; j++)
      cin >> A[i][j];

  cout << "Matrix: \n ";

  for (i = 0; i < m; i++)
  {
    for (j = 0; j < n; j++)
      cout << A[i][j] << " ";

    cout << "\n ";
  }

  if (m == n)
    cout << "This is a square matrix.";
  else
  {
    cout << "This is not a square matrix.";
  }

  return 0;
}
```

Flow Graph



The C++ function given above [Adapted from: https://www.sanfoundry.com/cpp-program-find-array-square-matrix-print-diagonals/] determines whether an entered matrix is a square matrix or not.

a. Draw the flow graph of this function inside the box given above. Nodes must be annotated clearly on the code.

b. Calculate the cyclomatic complexity of this function using all three formulas:

Formula 1: **E – N + 2** = 20-16+2 = 4+2 = 6

Formula 2: **P + 1** = 5+1 = 6

Formula 3: **R** = ER+R0 = 5+1 = 6

5:20

96

Monday

2:59 PM

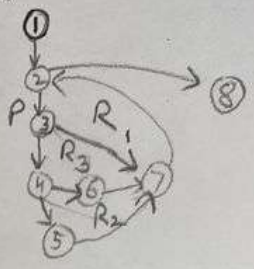
Javeria Saba

Quiz 4
Weightage 2%

Name Syed Abdullah Hassan Date _____ Roll no 22L-6191

Q Consider a C++ Function given below **Draw flow graph here**(0.5 marks)
nodes must be annotated clearly on code(0.5 marks)

```
Int divsum(int n)
{int i;
Int sum=0;
for(int i=0;i<=sqrt(n);i++){
if(n%i==0){
if(n/i==i){
sum=sum+i;
}
Else{
sum=sum+i;
sum=sum+(n/i);
}
}
}
Return sum;
}
```



Q Calculate cyclomatic complexity of this code using all three formulas(0.5 marks)

Formula 1= $R_0 + R_n = 4$
Formula 2= $E - N + 2 = 10 - 8 + 2 = 4$
Formula 3= $P = P + 1 = 3 + 1 = 4$

Q List all paths in a basis set of (linearly independent paths) of this flow graph(0.5 marks)

1 → 2 → 3 → 4 → 6 → 7 → 2 → 8
1 → 2 → 3 → 7 → 2 → 8
1 → 2 → 8
1 → 2 → 3 → 4 → 5 → 7 → 2 → 8

Weightage 2%

The developers of Super Magic, an electronic game for children aged 4–7, have decided to employ the dual test method. They determined their testing termination level to be residual undetected errors of 0.5%.
The testing teams summarized their achievements after eight weeks of testing and regression testing as follows:

Team A finds 80 errors (Na=85).
Team B finds 60 errors (Nb=96)
Both teams found 30 common errors (Nab=30).

1) Calculate Total Number of Errors (N)
2) Calculate Probability of errors found by Team A and Team B
3) Calculate Probability of errors not detected by both Teams.
4) Do Both teams need to stop testing? Answer with reason.

1) $N = \frac{N_a N_b}{N_{ab}} = \frac{85 \times 96}{30} = 272$

2) $P_a = \frac{N_a}{N} = \frac{85}{272} = 0.3125$

$P_b = \frac{N_b}{N} = \frac{96}{272} = 0.352$

3) $P_{(a)(b)} = \left(1 - \frac{N_{ab}}{N_b}\right)\left(1 - \frac{N_{ab}}{N_a}\right)$

$= \left(1 - \frac{30}{96}\right)\left(1 - \frac{30}{85}\right)$

$= (0.6875)(0.647)$

$= 0.4448$

4) $T = 0.5\% = 0.005$

$0.4448 > 0.005$ so they do not stop testing

Javeria Sadiq

FAST NUCES-Lahore

Name = _____

Roll No = _____

Quiz 6
Weightage 2%

Complete the table below to calculate the Crude Functional Point (CFP) using the provided information(1.5 marks). Alao Calculate FP value using formula given below.(0.5 marks)

- Number of user inputs – 2(1 simple,1 complex)
- Number of user outputs – 3(1 simple, 1 avg, 1 complex)
- Number of user online queries – 3 (1 simple, 1 avg, 1 complex)
- Number of logical files – 2 (2 simple)
- Number of external interfaces – 2(1 avg,1 complex)

WF=Weighted Factor

$FP = CFP \times (0.65 + 0.01 \times RCAF)$

Total RCAF = 41

Software System Components	Simple			Average			Complex			Total CFP
	Count	WF	Points	Count	WF	Points	Count	WF	Points	
User inputs		3			5			3		
User outputs		4			3			6		
User online queries		6			4			5		
Logical Files		10			6			4		
External interfaces		5			10			16		
Total CFP										

Quiz 6
Weightage 2%

Complete the table below to calculate the Crude Functional Point (CFP) using the provided information(1.5 marks). Alao Calculate FP value using formula given below.(0.5 marks)

- Number of user inputs – 2(1 simple,1 complex)
- Number of user outputs – 3(1 simple, 1 avg, 1 complex)
- Number of user online queries – 3 (1 simple, 1 avg, 1 complex)
- Number of logical files – 2 (2 simple)
- Number of external interfaces – 2(1 avg,1 complex)

$\Rightarrow FP = 80(0.65 + 0.01 \times 41$
$FP = 80(1.06)$
$FP = 84.8$

WF=Weighted Factor
FP = CFP × (0.65 + 0.01 × RCAF)
Total RCAF = 41

Software System Components	Simple			Average			Complex			Total CFP
	Count	WF	Points	Count	WF	Points	Count	WF	Points	
User inputs	1	3	3	0	5	0	1	3	3	6
User outputs	1	4	4	1	3	3	1	6	6	13
User online queries	1	6	6	1	4	4	1	5	5	15
Logical Files	2	10	20	0	6	0	0	4	0	20
External interfaces	0	5	0	1	10	10	1	16	16	26
Total CFP	33			17			30			80

11
+13
15
20
31

T. CFP

33
+17
+30
80

6
+13
19
+15
34
+20
54
+26
80

20+6+4+3
16+

3+4+6
+20

Roll No. 22i-2505 Name Tayyab Kamran Sami

1.5/2

Quiz 1

Weight: 2%

Q1. What do we mean when we say that software quality assurance (SQA) is an umbrella activity?

a) It means it is not restricted to a specific phase of the development cycle. It is carried out throughout the life cycle at every phase i.e Requirements, Design ect

Q2. What is the relationship between a bug, defect, and fault?

a) A Fault is an Event. Error in

Q3. A report produced by a hospital's management system shows a list of patients currently admitted in the hospital's general ward. This report is 80% complete but 100% accurate. What does this mean?

a) This means that the Hospital Management system Report in Incomplete but accurate.

Q4. Explain the difference between Authentication and Authorization.

Authentication means the mechanism we secure our application so that non related people cannot access our application. The main Authentication mechanisms are Login and Signup. Meanwhile Authorization is the mechanism through which we determine which user can perform which tasks. Like User ~~Admin~~ is not authorized to Read or update the System users. The authorization mechanism prevents users to do admin level tasks. In this way each role in the system can we verified and specific actions are authorized.

Roll No. 22i-2505 Name Tayyab Kamran Sami

Quiz 2

Weight: 2%; CLO 1

0.4/5

Q1. Why do we need a comprehensive SQA system?

we need it because it is must to ensure quality at each and every life cycle step as the pre cost invested in quality saves us from large software failure cost and inaccurate software.

0.1

Q2. What is the main purpose of the pre-project category of components of the SQA system?

It deals with the contract and ensuring the quality of the contract. Also it deals with lifecycle and development planning. which helps us better understand the deadline ect.

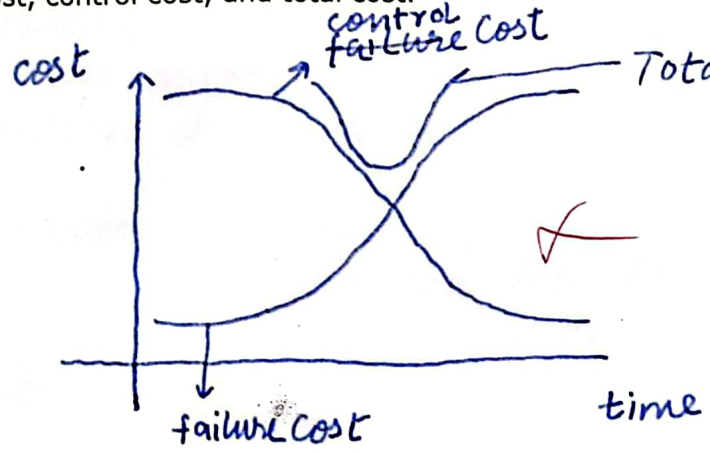
0.1

Q3. How does using templates (e.g. a template for SRS) lead to better software quality?

Templates help us as we donnot have to reinvent the wheel we can reuse efficient templates which are quality wise also ok. If we write it from scratch it might not be that efficient and there will be bugs in it too.

0.1

Q4. Draw a thoroughly labelled diagram which illustrates the relationship between failure cost, control cost, and total cost.



~~SRS Template~~ :-

~~Usino~~

Roll No. 22i-2505 Name Tayyab Kamran

Quiz 3

Weight: 2%; CLO 1

1.8/2

Q1. Explain why software testing should be carried out by third parties instead of the original programmers.

Software Testing should not be done by orignal programmers as they will not test the software with the intention of finding as much bugs as possible. There will be a biasness there and due to this it is good that third parties test the software. As no one wants to uncover faults in his own software.

0.5

Q2. Why is Big Bang integration testing not suitable for professional software?

Big Bang Integration is not suitable as finding the location of error when the testing the whole system at once is very hard. It is suitable that Software must be tested in small then large.

0.5

Q3. Compare and contrast stubs and drivers in the context of integration testing.

Comparison (Similarity):

Both are dummy modules used to test other modules during integration testing.

0.5

Contrast (Difference):

Dummy Modules used in the top-down testing is known as Stub. While Dummy Modules used in Bottom up Testing are Drivers.

Q4. What is the purpose of smoke testing?

Smoke testing is done for just as the overview testing it is also known as {Moti Moti} Testing. In this we test the hardware of the System. And just checks if it works fine. with ?

0.3

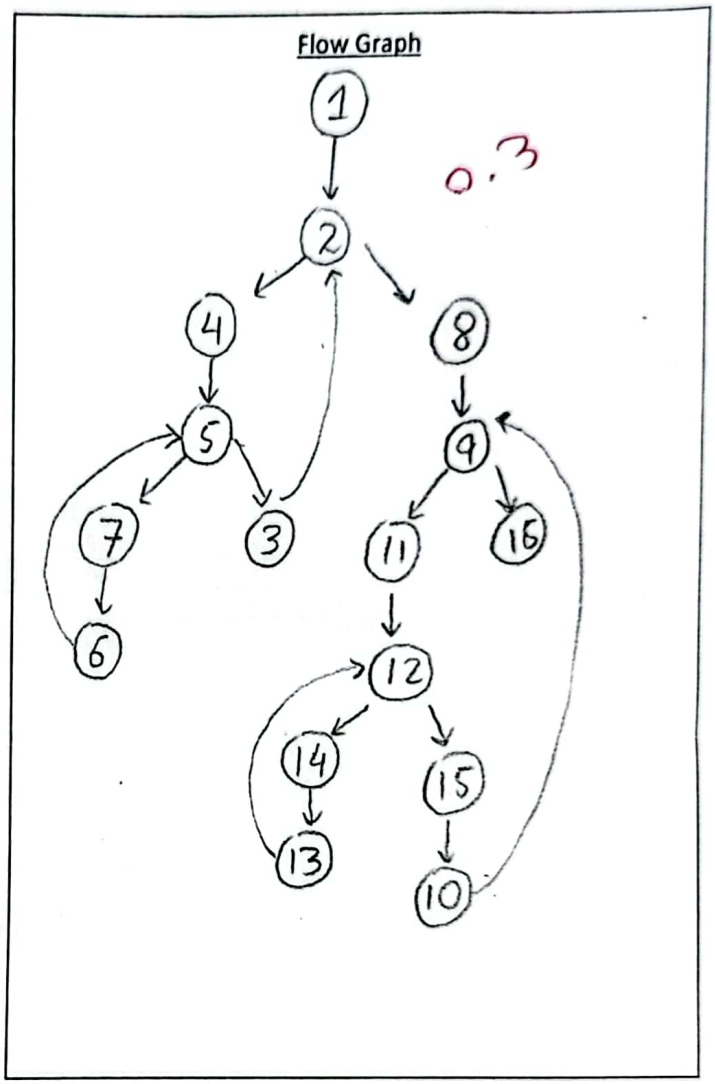
SE3002 (BSE-5A) FAST-NUCES 0.6/2 Dr. Ali Afzal Malik

Roll No. 22i-2505 Name Tayyab Kamran Sami

Quiz 4

Weight: 2%; CLO 3

```
int main(){
  // Defining dimensions of the original matrix.
  int N=4, M=3;

  // Declaring it & Initializing values.
  int mat[N][M]={
     {1, 2, 3},
     {4, 5, 6},
     {7, 8, 9},
     {10, 11, 12}
  };

  // Declaring transpose matrix with inverted
  // dimensions i.e. M * N
  int T_mat[M][N];

  // Assigning values accordingly.
  for(int i = 0; i < N; i++){
     for(int j = 0; j < M; j++){
        T_mat[j][i] = mat[i][j];
     }
  }

  // Printing the transposed Matrix.
  cout<<"\nTransposed Matrix is -\n";
  for(int i = 0; i < M; i++){
     for(int j = 0; j < N; j++){
        cout<<T_mat[i][j]<<"\t";
     }
     cout<<endl;
  }

  return 0;
}
```



The C++ function given above [Adapted from: https://www.scaler.com/topics/transpose-of-a-matrix-in-cpp/] finds and prints the transpose of a matrix.

a. Draw the flow graph of this function inside the box given above. Nodes must be annotated clearly on the code.

b. Calculate the cyclomatic complexity of this function using all three formulas:

Formula 1: E – N + 2 = 19 – 16 + 2 = 5

Formula 2: P + 1 = 4 + 1 = 5

Formula 3: R = 5

Roll No. 22i- 2505 Name Tayyab Kamran.

Quiz 5

Weight: 2%; CLO 2

7/7

Q1. What is the main difference between a baseline version and an intermediate version of a software configuration?

Baseline versions are the preplanned versions and they denote an important mile stone. While the intermediate versions are unplanned and contains minimal change.

Q2. List any five factors used to evaluate an SCR.

1) How Urgent, 2) How Important, 3) How much Resources, 4) How much Effort 5) How many SCIs are effected. 6) How much time.

Q3. What is the main difference between measurement and calculation? Support your theoretical answer with an example from the domain of software engineering.

Measurement is direct while calculation is indirect. Measurement is assigning some value/symbol on the basis of some attribute of an entity. While calculation is performed on ~~two~~ m basis of measured thing. e.g we measure the lines of code in software but we calculate the defect density.

Q4. Which arithmetic operation(s) (i.e. addition, subtraction, multiplication, and division) can be performed on variables measured using each of the following measurement scales?

Nominal: It is qualitative so no arithmetic operation.

Ordinal: It is also qualitative so no arithmetic operations.

Interval: addition and substraction can be performed

Ratio: addition, substraction, multiplication & division.

Absolute: addition, substraction, multiplication & ~~dividision~~ division.

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Quiz 3
2%

Name=_____ Roll no=_____

Please fill out this inspection report and calculate the effectiveness metrics at the end.

Resources Invested (hours)

Team Members	Overview meetings	preparation	Inspection session	Total hours
john	1	0.5	3.5	5
ben	5	2.5	3	10.5
mark	1	4		5
justin		1	1	2
total	**7**	**8**	**7.5**	**22.5(B)**

Error summary

Error nature W M E	Total error	Error severity factor	Total error standardized
2	2	16	32
2 1	3	16	48
3	3	12	36
3	3	4	12
3	3	7	21
1	1	3	3
2	2	8	16
total	**17(C)**		**168(D)**

A=Total number of pages=31

Defect Detection metics

1. Average defects per page = C/A=0.55
2. Average defects per page (standardized) = D/A=5.42
3. Defects detection efficiency = B/C=1.32

4. Standardized defect detection efficiency = B/D=0.13

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Quiz 5
Weightage 2%

The developers of Super Magic, an electronic game for children aged 4–7, have decided to employ the dual test method. They determined their testing termination level to be residual undetected errors of 0.5%.
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4) Do Both teams need to stop testing? Answer with reason.

Solution
N=Na*Nb/Nab=272
Pa= Na/N=0.3
Pb=Nb/N=0.35
P(a)(b)=0.4<0.5 should stop testing

Javeria Sadiq FAST-NUCES Lahore

Name _____ Roll No _____

Quiz 6
Weightage 2%

A software house, *TechPro Solutions*, was tasked with developing a comprehensive inventory management system for a client. The project manager decided to use the Function Point (FP) Method to estimate the project's size and effort. The teams followed the three stages of the FP method:

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Crude Function Points (CFP): 200

Stage 2: Compute the Relative Complexity Adjustment Factor (RCAF):
The teams assessed the complexity characteristics of the software system, assigning grades (0 to 5) to the 14 factors influencing development efforts. However, one team calculated and reported an RCAF value of 97.

Stage 3: Compute Function Points (FP):
The team used the formula:
$FP=200\times(0.65+0.01\times97)$

Q1-Determine if this scenario is valid or not. Explain your reasoning.(1 mark)

Invalid because RCAF range in 0-70

Q**2-Process metrics are primarily focused on:(0.5 marks)**
a) Software maintenance
b) Software usability
c) **Software development process**
d) Software deployment

Q3-Which of the following is related to process metrics?(0.5 marks)
a) **Testing phase effectiveness**
b) Maintainability of software
c) Code readability
d) Defect density during usage