PURDUE UNIVERSITY FORT WAYNE
Department of Computer Science
COLLEGE OF ENGINEERING, TECHNOLOGY, AND COMPUTER SCIENCE

**CS 360: Software Engineering**

# Assignment/Homework-3

(150 points)

Answer the following Questions for method/technique [10*10=100 Points]

1.Define/Describe [ 2 points]

2.Explain the testing method with the help of an example code/case study [5 Points]

3.Pros/Cons (strengths/weaknesses) [ 3 points]

a) Functional Cohesion
b) Communicational Cohesion
c) Logical Cohesion
d) Content Coupling
e) Common Coupling
f) Stamp Coupling
g) Mutation Testing
h) Regression Testing
i) Iterator pattern
j) Decorator pattern

Answer the following Questions for each testing technique [50 Points]

Specification: the basic cost of an insurance premium for drivers is $500, however, this premium can increase or decrease depending on three factors: their age, their gender and their marital status. Drivers that are below the age of 25, male and single face an additional premium increase of $1500. If a driver outside of this bracket is married or female their premium reduces by $200, and if there are aged between 46 and 65 inclusive, their premium goes down by $100.

```
(1) int liability (int age, char sex, boolean married) {
(2) Premium=500;
(3) If ((age<25) && (sex==male) && (!married)) {
(4)    Premium += 1500;
(5)  } else {
```

```
(6) If (married || sex==female) {
(7)   Premium -= 200
(8)      }
(9)   If ((age>45) && (age<65)  {
(10)  Premium -= 100;
(11)          If(age>85)
(12)            Premium=10000;
(13)  }
(14) return Premium;
(15) }
```

Using this, justify how you would derive T[ test cases and test data], calculate Coverage, and Adequacy for the following White Box Software testing methods: [ 5* 10 = 50 Points]

1. Statement Testing/Coverage
   (a) Derive test case set (T), [ you can derive your own test case set]
   (b) Statement Coverage ( Sc/(Se-Si)  [ Sc, Se, Si]),
   (c) T is adequate or not ?
2. Block Testing/Coverage
3. Branch(Decision) Testing/Coverage
4. Condition Testing/Coverage
5. Condition+Decision Testing/Coverage

Note:

Answer the following three questions for above five testing/coverage methods.

(a) Derive test case set (T), [ you can derive your own test case set]

(b) Coverage (Example :Sc/(Se-Si)  [ Sc, Se, Si]),

(c) T is adequate or not ?

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Submission: **Brightspace**(online)

Assignment/Homework Type: **Individual** (not group/team work) and **Open book**

Submission Type: **PDF document** (all questions in one file)

Due Date: **11:00 PM, Monday, 11/30/2020**

Note :

1. You can use any material [google/books/paper/journals]
2. However, you can't copy\paste[plagiarism <20%] from any source directly. The reference materials need to be rewritten or paraphrased based on your understanding and context: including code examples/case study
3. Code Examples can be written in any programming language of your choice