ECE 322
SOFTWARE TESTING AND MAINTENANCE
Fall 2021

Assignment #2

Due date: Monday, October 4, 2021 by 3:00 PM

Total: 45 points

Value 5 points

1.Find on the Internet an application next_date (having the same functionality as the one discussed in class). Complete its testing for the input dates of October 4, 1582 and September 2, 1752. Comment on the obtained results. Include also a link to the application you have tested.

Value 10 points

2.Suggest a collection of test cases to test a procedure finding a maximum of five integer numbers

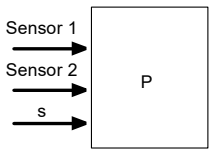
```
maxofFiveNumbers(int n1, int n2, int n3, int n4, int n5)
```

Integer numbers are represented using a 128 bit representation. Consider (i) exhaustive testing and (ii) error guessing.

Value 15 points

3.(i) Suppose that an application has *n* inputs (variables) and each variable partitions its input space in *m* equivalence classes. Determine the number of equivalence classes. How many tests do you require? Could you make the number of tests lower? Do detailed calculations for n =20 and m =10.

(ii) Some procedure *P* has three inputs



This procedure is invoked under the following input readings:

Sensor 1: (10, 25) or [15, 50]. The sensor generates positive readings with values in [0, range1], range1>50.

Sensor 2: [-1,1] or [4, 5]. The sensor generates both positive and negative readings from some range [-range2, range2], range2 >5.

Control variable *s*: {1, 2}. The control variable assumes positive integer values {1, 2,... s_{max}}

Identify equivalence classes in this problem. Consider weak normal equivalence testing and strong normal equivalence testing. List test cases.

Value 15 points

4. Consider a two-dimensional input domain described as

$$W = [0, 10] \times [0, 20]$$

(viz. there are two input variables assuming values in the corresponding intervals). In this domain, there are four equivalence classes given as

$$W_1 = \{(x, y) \mid x^2+y^2 \leq e^2\}$$

$$W_2 = \{(x, y) \mid (x-1)^2+ (y-2)^2 \leq e^2\}$$

$$W_3 = \{(x, y) \mid (x-0.5)^2+ (y-2.5)^2 \leq e^2\}$$

$$W_4 = W-W_1-W_2-W_3$$

where e is a certain positive number. What should be the maximal value of e so that these equivalence classes form a partition?