**Shakir Ali CPSC 1160 Assignment 1**

**Checkpoint Questions**

**1.38** What are syntax errors (compile errors), runtime errors, and logic errors

Syntax errors are errors caused due to typing mistake such as misspelled variable name or unmatching parenthesis missing semi colon etc.

Runtime Errors are Errors occurring during the execution of the program for example entering NaN for double cin or ask the program to perform arithmetic on str data types .

Logic Errors are Errors when syntax and execution is correct but the logic behind the functions used to get output is wrong. For example an incorrect mathematical expression syntax for an arithmetic operation

**2.12**

56 % 6 = 2

78 % 4 = 2

34 % 5 = 4

34 % 15 = 4

5 % 1 = 0

1 % 5 = 1

**2.14**

25/4 = 6

For floating point we write it as

(double) 25 / 4

**2.18**

1.0 \* m \* r \* r

**2.28**

purchaseAmount = 197.556;

hence tax = 197.556 \* 0.06 = 11.85336;

and output will be 1185/100 = **11** since int / int

**3.11**

Every score which is 60 or above will be a D even 93 which is wrong!!

**3.12**

a) 🡨(meaning no output)

b) Tax is 0.15

c) Amount is 5

Tax is 0.15

d) Amount is not zero

**3.16**

**a)**

|  |  |  |
| --- | --- | --- |
| **14** | **15** | **30** |
| 14 is even | 15 is multiple of 5 | 30 is even  30 is multiple of 5 |

**b)**

|  |  |  |
| --- | --- | --- |
| **14** | **15** | **30** |
| 14 is even | 15 is multiple of 5 | 30 is even |

**3.23a**

x > 5-4.5 && x > 5 + 4.5

**3.25**

Yes, because seprated by && if it was || then it was different case

**3.39**

True

**3.40**

False

False

**4.2**

True

**5.13**

it loops infinitely doing something

**6.22**

a)

max is 0

b)

max is 2

c)

2

2 4

2 4 8

2 4 8 16

2 4 8 16 32

2 4 8 16 32 64

d)

2

2 4

2 4 8

2 4 8 16

2 4 8 16 32

2 4 8 16 32 64

**Test Plan**

**Black box**

|  |  |  |  |
| --- | --- | --- | --- |
| **Input Values(last year price, current year price)** | **Reason for input values** | **Expected outputs** | **Actual results** |
| 50,100 | Simplest inputs | 100.00% | 100.00% |
| 100,50 | Check for deflation | -50.00% | -50% |
| 77.65,44.43 | Real world possibility | -42.78% | -42.78% |
| 20,5000000000 | 2007/08 in Zimbabwe | 2.49 \* 10^10 % | 24999999900.00% |
| 50,50 | No inflation | 0.00 % | 0.00% |

**White box**

|  |  |  |  |
| --- | --- | --- | --- |
| 0,1 | Check for code that can crash the program | Math Error | Inflation rate for the product tends to Infinity |
| 0,0 | Check for code that can crash the program | Math Error | Inflation rate for the product is an Indeterminate |

**Discrepancies –** Happening in whitebox testing, since the calculator handles the mathematical errors and gives a custom output while the program puts it in a different way eventually meaning same thing which is a mathematical error.

**Output**

