**University of Michigan – Dearborn**

**CIS 150 – Computer Science 1**

**Lab# 3**

**Professor Anys Bacha**

Demetrius Johnson

[meech@umich.edu](mailto:meech@umich.edu)

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# Question 1 –no test cases needed; only two screenshots total needed

## Test Cases

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test # | Valid / Invalid Data | Description of test | Input Value | Actual Output | Test Pass / Fail |
| 1 | Valid | Use “IF” branch | x = 15 | x = 16; y = 25 | Pass |
| 2 | Valid | Use “ELSE” branch | x = 14 | x = 28; y = 791 | Pass |

## Source Code – see LAB3Q1.CPP

#include <iostream>

using namespace std;

int main() {

int x, y;

cout << “Please enter an integer value: “;

cin >> x;

if (x >= 15)

{

x++;

y = x + x - 7;

}

else

{

x = x \* 2;

y = x \* x + 7;

}

cout << “x = “ << x << “ y = “ << y << endl;

system(“pause”);

return 0;

}

## Screenshots

TEST 1 – IF BRANCH

![A screenshot of a computer screen

Description automatically generated]()

![A screenshot of a computer

Description automatically generated]()TEST 2 – ELSE BRANCH

# Question 2

## Test Cases

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test # | Valid / Invalid Data | Description of test | Input Value | Actual Output | Test Pass / Fail |
| 1 | Valid | Test registration age valid or not | userName = meech  userAge = 18 | Cout << registration processed… | Pass |
| 2 | Valid | Test registration age valid or not | userName = meech  userAge = 21 | Cout << registration processed | Pass |
| 3 | Valid | Test registration age valid or not | userName = meech  userAge = 15 | Cout << not eligible to vote | Pass |
| 4 | valid | Test registration age valid or not | userName = meech  userAge = 17 | Cout << not eligible to vote | pass |

## Source Code – see LAB3Q2.CPP

## Screenshots

TEST 1![A screenshot of a cell phone

Description automatically generated]()

TEST 2

![A screenshot of a computer

Description automatically generated]()

TEST 3

![A screenshot of a cell phone

Description automatically generated]()

TEST 4

![A screenshot of a cell phone

Description automatically generated]()

# Question 3

## Test Cases

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test # | Valid / Invalid Data | Description of test | Input Value | Actual Output | Test Pass / Fail |
| 1 | Valid | Test <= 40 hrs/week | Cin>> 30 >> 30 | weeklPay = 900 | Pass |
| 2 | Valid | Test <= 40 hrs/week | Cin>> 40 >> 40 | weeklPay = 1600 | Pass |
| 3 | Valid | Test > 40rs/week | Cin>> 50 >> 50 | weeklPay = 2750 | Pass |
| 4 | valid | Test > 40rs/week | Cin>> 60 >> 60 | weeklPay = 4200 | Pass |

## Source Code – see LAB3Q3.CPP

## Screenshots

TEST 1

![A screenshot of a cell phone

Description automatically generated]()

TEST 2

![A screenshot of a cell phone

Description automatically generated]()

TEST 3

![A screenshot of a cell phone

Description automatically generated]()

TEST 4

![A screenshot of a computer

Description automatically generated]()

# Question 4

## Test Cases

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test # | Valid / Invalid Data | Description of test | Input Value | Actual Output | Test Pass / Fail |
| 1 | Valid | Valid roots | A = 1  B = 0  C = -9 | Root1: 3  Root2: -3 | Pass |
| 2 | Valid | no roots | A = 0  B = 0  C = 0 | No real roots | Pass |
| 3 | Valid | Valid roots | A = -2  B = -2  C = 2 | Root1: -1.61…  Root2: 0.61…. | Pass |
| 4 | valid | no roots | A = 1  B = 0  C = 1 | No real roots | Pass |

## Source Code – see LAB3Q4.CPP

## Screenshots

TEST 1![A screenshot of a cell phone

Description automatically generated]()

TEST 2

![A screenshot of a cell phone

Description automatically generated]()

TEST 3

![A screenshot of a computer

Description automatically generated]()

TEST 4

![A screenshot of a computer

Description automatically generated]()