Lab 2,Exercise 1

1.Identify which one of the following would be an illegal variable name or identifier. Give reason for your selection

a.1SECJ = illegal,because it start with number

b.School\_Computing = legal,because it consist of underscore

c. year 2019 = illegal,because there is a space between word

d.$650 = legal,because $ means dollar and its is a variable

e.\_radius = legal,because it start with underscore

f.return = illegal,its is no a specific identifier

g.#length = illegal,its not a variable

h.Float = legal,because it is an identifier

i.height = legal,because it is a variable

5. Show the content of the following variables after executing the assignment statements. Determine the size of memory that is reserved to store the data in the variables.

a. int id= 109; 4 bytes

b. char symbol=’$’; 1 byte

c. float average= 4.5; 4 bytes

d. long population=4567890; 4 bytes

e. double volume=6788.987; 8 bytes

6.Identify which of the following variable declaration are incorrect. Give reason for your answer and provide the correct variable declaration.

a. float number 12; incorrect. float number=12

b. char letter = “b”; incorrect.” ”is for word or statement. char letter= ‘b’

c. int mark = 99.9; incorrect. int variable does not count on decimal. float mark = 99.9

d long snum = 888888.88; incorrect. long variable does not count on decimal. double snum = 888888.88

e. double w1 = 10; w2 = 2.55 ; w4 = 940; incorrect. add coma after the number before type new variable double w1=10, w2=2.55, w4=940

7. Write a program that has the following variables: name, birth\_year and home\_town. Store your name, birth\_year and your home\_town in these variables and then display them on the screen.

 1.#include <iostream>

 2.using namespace std;

 3.

 4.int main()

 5.{

 6. char name, birth\_year, home\_town;

 7. cout<<”What is your name=”;

 8. cin>>name;

 9. cout<<”When is your birth\_year=”;

 10. cin>>birth\_year;

 11. cout<<”Where is your home\_town=”;

 12. cin<<home;

 13.

 14. cout<<”Your name is “<< name << endl;

 15. cout<<”Your birth\_year is “<<birth\_year << endl;

 16. cout<<”Your home\_town is “<<home\_town << endl;

 17. return 0;

 18.}

8.Given the following declaration for four variables. Which of the following assignments is not valid? Give reason for your answer.

1.//Program 2.1

2.

3.int m=2,n=3;

4.double r=28.5,s=5.0;

1. m= r;

invalid. r is double type and m is integer type cannot hold decimal value

1. m= n - 2.3;

invalid. Integer type cannot hold decimal value

1. s+2= r;

invalid. S+2 should be write at right hand side and r write at left hand side

1. m= 12 / s;

invalid. Since 12 divide by s will get value with decimal and integer m cannot hold the decimal

1. r= n / s; valid
2. s= m + 1; valid
3. m= s % n; invalid. Modulus only can work with two integers

9.Write the variable declarations of x, y and z, and the assignment statements that perform the following operations. Show the content of the memory for the variable.

a. Declare the variable x as type integer. int x

b. Declare the variable y as type float. float y

c. Declares the variable z as type character. char z

d. Store 4 to variables x. x = 4

e. Multiplies x with 5.0 and stores the result in y. y = x\*5.0

f. Divides y by 3.5 and stores the result in y. y = 3.5 / y

g. Stores the character ‘F’ in z. char z = ‘F’

10. Write the following formula in C++ statement:

a. $\sqrt{height^{2}+length^{2}}$ squa(pow(height,2) + pow(length,2));

b. $\frac{1}{1+x^{2}}$ 1/(1+pow(x,2))

c. $x^{2}+3x+2$ pow(x,2)+3x+2

d. $πr^{2}$ 3.14159\*pow(r,2)

11. Determine the result of the following arithmetic expressions. If there is error, state the reason.

a. (24 - 6) / (4 + 2) 3

b. 18 - 13 / 3.0 13.66666667

c. 12 / 3 – 3 % 2.5 error. Modulus only work with two integers

d. 24 – 6 / 4 + 2 24.5

12. State the order of evaluation for each of operator in the following C++ statements, and show the value of x after each statement is performed. Fill in the following boxes.

a. x = 8 \* (2 + 3) / (4 – 2);

x=8\*5/(4-2);

x=8\*5/2

x=40/2

x=20

b. x = (12 + 4) / 4 + 30 / 3 – 3 ;

x =16 / 4 + 30 / 3 – 3

x =4 + 30 / 3 – 3

x =34/3 – 3

x =11.333333 – 3

x =8.333333

c. int a=3, b=5, c=4;

x = a + b \* c-- % ++b;

x = 3 + 5 \* 4 % 6

x = 3 + 20 % 6

x = 3 + 2

x = 5

13. Given the following definition of the variables, determine the content of the variables

1.//Program 2.2

2.

3.int a = 4, b = 5, c;

4.double x = 8.486, y = 7.312, z;

1. z = a/b;

z = 0.8

1. z = static\_cast<double>(a)/b;

z = 0.8

1. z = static\_cast<double>(a/b);

z = 0

1. c = static\_cast<int>(x)/a;

c = 2

1. c = static\_cast<int>(x/a);

c = 2

1. c = static\_cast<int>(x)/static\_cast<int>(y);

c = 1

14. Referring to the variable definations below, what are the values changed in the following statements? Show the memory layout of the variables.

 Int j = 2, k = 3, m = 4;

1. k += j; k = 5
2. j \*= 2; j = 4
3. m /= j + 3; m = 1
4. m -= j \* k; m = -2