

PI	P2	P3	P4	To.
/15	/5	/10	15/	/45

HiLCoE
School of Computer Science and Technology
Computer Programming I (Using C++) (CS530)
Final Exam
Autumn 2018

Name: _____

Time: 3 Hrs.

Part I: Multiple Choice Questions

Instruction: Please write your answers for this part only on the spaces provided on the question paper.

_____ 1. One of the following C++ statements executes the set of statements zero or more times, until some condition is met

- A. Loop Statement
- B. Input/Output Statement
- C. Declaration Statement
- D. Increment Statement

_____ 2. One of the following statements executes a set of statements at least once before it checks the condition

- A. while statement
- B. for statement
- C. do ... while statement
- D. goto statement

_____ 3. Consider the following code fragment

```
float num [4] = {0.0, 1.0, 3.0, 5.5};
float *ptr;
ptr = num;
```

Assume the address of the first location in the array **num** is 7000. Which of the following is false?

- A. num is the same as &num[0]
- B. num[3] is equal to *(ptr+3)
- C. ptr+3 is equal to 7012
- D. None of the above

_____ 4. What is the output produced by the following?

```
int x = 10;
while (x > 0) {
    cout << x << " ";
    x = x - 3;
}
```

- A. 10 9 8 7 6 5 4 3 2 1
- B. 10 7 4 1
- C. 1 2 3 4 5 6 7 8 9 10
- D. None of the above

_____ 5. Which one of the following is wrong array initializing statement?

- A. int y[4][] = {1, 2, 3, 4,}
- B. int x[] = {3, 4, 6};
- C. int x[3] = {10, 15, 20};
- D. int Z[][2] = {{1,2}, {3,4}, {5,6}};

_____ 6. What will be the output produced by the following code if the value of `vehicleType` is 2?

```
int vehicleType;
cout << "Enter vehicle type: ";
cin >> vehicleType;
switch (vehicleType) {
    case 1:
        cout << "Passenger car.";
    case 2:
        cout << "Bus.";
    case 3:
        cout << "Truck.";
    default:
        cout << "Unknown vehicle class!";
}
```

A. Bus.

B. Passenger Car.

C. Bus.Truck.

D. None of the above

_____ 7. Consider the following code.

```
int X = 5, Y;
int * Z;
```

One of the following is wrong statement

A. `Z = &X`

B. `Y = X`

C. `Y = *Z`

D. `Z = *X`

_____ 8. In a `for` statement, which expression is executed only once?

A. Test

B. Null

C. Initialization

D. Validation

E. None of the above

Consider the following statement and answer Questions 9, 10, and 11

```
int X = 0;
char City[] = "He was born in Debre Zeit";
X = strlen(City);
char str[100] = "In 1977";
char str1[100];
```

_____ 9. What is the value of X?

A. 0

B. 20

C. 25

D. 26

E. A and C

_____ 10. What will be the output of the following code?

```
strcat(strcat(str, " "), City);
cout<<City;
```

A. He was born in Debre Zeit

B. He was born in Debre Zeit in 1977

C. In 1977He was born in Debre Zeit

D. In 1977 He was born in Debre Zeit

E. None of the above

11. What will be the output of the following code?

```
for(int i = 0; i < X - 5; i++){
    str1[i] = City[i];
}
strcpy(str, str1);
cout<<str;
```

- A. He was born in Debre Zeit
- B. In 1977
- C. He was born in Debre Zeit in 1977
- D. He was born in Debre
- E. None of the above

12. One of the following C++ statements accepts a string "Happy New Year". Assume str is declared as a character array.

- A. cin>>str;
- B. cin.getline(str,17);
- C. cin.get(str,17);
- D. B and C
- E. All of the above

13. What are the values in the array after execution of the following code?

```
int a[4] = {3, 7, 6, 2};
int i = 2;
a[i] = i + 1;
a[i + 1] = a[ i - 1];
a[1] = 5;
```

- A. 5, 3, 3, 6
- B. 3, 5, 3, 7
- C. 5, 7, 3, 7
- D. 5, 7, 2, 1
- E. None of the above

14. An array is a collection of

- A. Different data types placed next to each other in memory
- B. The same data type scattered throughout the memory
- C. The same data type placed next to each other in memory
- D. Different data types scattered throughout the memory

15. Given the following nested loop, how many times will "hello" be displayed on the screen?

```
int i = 1;
while(i < 5){
    int j = 10;
    while (j > 5){
        j --;
        cout<<"hello"<<endl;
    }
    i = i + 5;
}
```

- A) 5
- B) 10
- C) 25
- D) 4
- E) None of the above

Part II: True or False (5 Pts.)

Instruction: Please write your answers for this part only on the spaces provided on the question paper.

1. _____ Assignment operator (=) cannot be used to copy one string to another as:
`str1 = str2;`
2. _____ Any code that can be written with multiple *if-else* statements can also be written with a *switch-case* statement.
3. _____ Both **for** and **while** statements check the condition before they perform any operation.
4. _____ Consider the statement: `strcmp (str1, str2);` this function returns negative value if str2 is less than str1
5. _____ **break** statement is used to exit from the given **if** statement.

Part III: Short Answer

Instruction: Please write your answers for this part only on the answer sheets provided.

1. Rewrite the following loop using **for** loops. (1 Pt.)

```
int i = 1;
while(i <= 10) {
    cout << 'X' ;
    i = i + 1;
}
```

2. What is the output of the following code? (2 Pts.)

```
x = 2;
while (x != 12) {
    cout << x << endl;
    x = x + 2;
}
```

3. Consider the following array declaration and answer the below given questions (2 Pts.)

```
double score[5];
```

A. The array name: _____

B. The data type: _____

C. The size of the array: _____

D. Write the statement that displays the 4th element: _____

4. What is the output of the following code? (2 Pts.)

```
int F = 5, S = 15;
int * p1, * p2;
p1 = &F;
p2 = &S;
cout << "The outputs: " << *p1 << " " << *p2;
```


5. What is the output produced by the following code? (3 Pts.)

```
int myArray[4][4], ind1, ind2;
for (ind1 = 0; ind1 < 4; ind1++)
    for (ind2 = 0; ind2 < 4; ind2++)
        myArray[ind1][ind2] = ind2;
for (ind1 = 0; ind1 < 4; ind1++){
    for (ind2 = 0; ind2 < 4; ind2++)
        cout << myArray[ind1][ind2] << " ";
    cout << "\n";
}
```

Part IV: Workout (15 Pts.)

Instruction: Please write your answers for this part only on the answer sheets provided.

1. Write a complete C++ program that accepts a string and perform the below given operations. The program should stop accepting the string when the user types '\$' sign.

- count the number of letters, digits, and special characters
- count the number of vowels and consonants
- count the number of words in the given string.
- Count the number of sentences
- Display your output as shown in the example.

Note: You must use character array for the string.

For example:

Input: C++ is a wonderful language. C++ was first developed in the early 1980s. \$

Output:

Letters	Digits	Special Symbols	Words	Sentences
51	4	17	13	2