اسئلة سنوات
c++

فاينل

Ayman Qarout

اسئلة سنوات فاينل

2020 فصل اول+ثاني

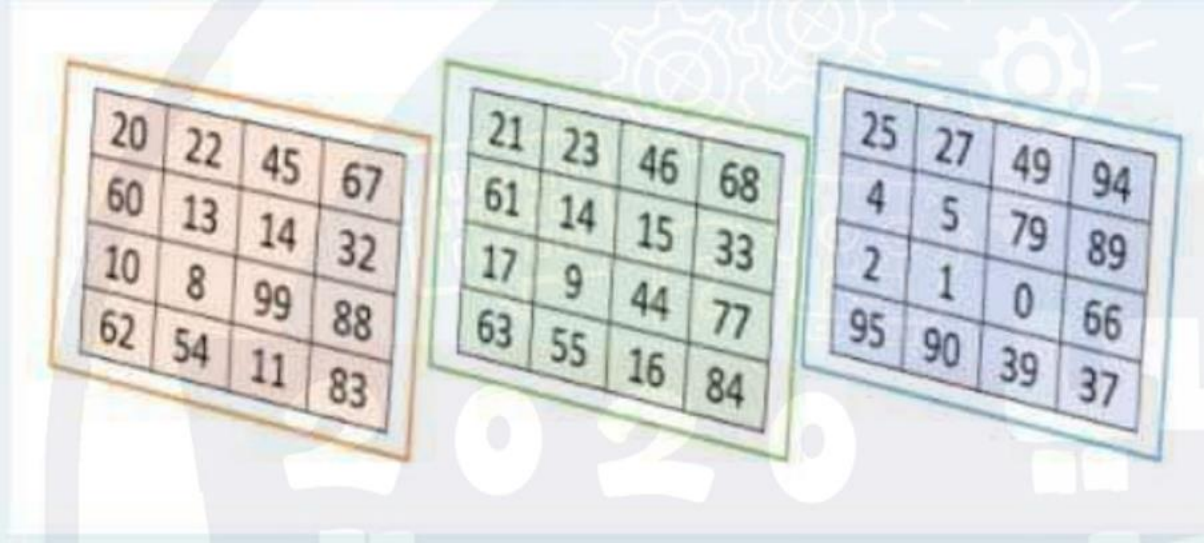
1- What values the variables a, b, and c can take such that the expression below is evaluated to true?

(a && b && c)

```
a- a = 100, b = 100, c = -100
b- a = 100, b = 0, c = -100
c- a = 0, b = 100, c = 0
d- a = 0, b = 0, c = 0
```

2- Given the following representation of a 3D array called array3d that we access from left to right, and where the Indices follow the notation of row, column, slice, respectively, what is the value of

(array3d[1][0][1])




```
a-  23
b-  61
c-  27
d-  79
```

3- Fill in the correct escape sequences in the string below such that the output will be:

Jerash, Petra, and the Dead Sea are

Major tourist attractions in “Jordan

```
cout << "Jerash, 1 Petra, and the Dead Sea are 2
Major tourist attractions in 3 Jordan";
```

1- a) \t, b) \n, c) \", d) \b

2- a) \t, b) \n, c) \", d) \b

3- a) \t, b) \n, c) \", d) \b

4- Which of the following switch statements is/are guaranteed to **NEVER** execute?

```
switch (rand() % 5 + 5) {
    case 0:cout << "Zero"; break;
    case 1:cout << "one"; break;
    case 2:cout << "Two"; break;
    case 3:cout << "Three"; break;
    case 4:cout << "Four"; break;
    default:cout << "default case"; }
```

a- All cases will execute

b- The default case

c- case 3 and case 4

d- The statements from case 0 to case 4 will never execute

e- case 4 only

5- What is the output of the following code?

```
int x = 50, y = 180, z = 150;
int *arr[] = {&x, &y, &z};
cout << arr[1];
```

a- The address of variable y
b- 10
c- None of the answers
d- The address of variable z
e- 150
f- 50
g- The address of variable x

6- The content of the integer array ARR is (4, 8, 12, 16, 20, 30, 40, 50, 60, 70, 80, 90, 100). What is the value of N after executing the following code

```
int* p = &ARR[3];
int N = *ARR * 2 + *(p - 3) + 19;
```

a- 31
b- 27
c- None of the answers
d- 28
e- 30
f- 29

7- Which of the following options generates a random number between [-5,3] inclusive.

a- rand()%10-5
b- rand()%10-4
c- rand()%9-5
d- rand()%9-4

8- The following code enters 10 angles from the keyboard, and prints out the type of the angle based on the following. You are required to choose the correct answers from the dropdown lists.

Angle value (degrees)	Type
Less than or equal 90^0	Acute angle
Greater than 90^0 and less than or equal 180^0	Obtuse angle
Greater than 180^0 and less than or equal 360^0	Reflex angle

```
double angle;
for (int i = 0; i < 10; i++) {
      cout << "enter angle in degrees: ";
      cin >> angle;
      if (angle <= 90)
            cout <<"Acute angle" << endl;
      else if ( 1 )
            cout << "Obtuse angle" << endl;
      else if ( 2 )
            cout << "Reflex angle" << endl;
}
```

1- a) (90<=angle && angle<=180) \ b) (90<angle && angle<=180) \
c) (90<=angle && angle<180) \ d) (90<angle && angle<180) \ e) (90<angle || angle<=180)

2- a) (180<angle && angle<360) \ b) (180<=angle && angle<360) \ c) (180<angle && angle<=360) \
d) (180<=angle && angle<=360) \ e) (180<angle || angle<=360)

9-What values the variables a, b, and c can take such that the expression below is evaluated to true?

(!a && !c && b)

a- a = 0, b = 100, c = 0

b- a = 0, b = 0, c = 0

c- a = 100, b = 0, c = -100

d- a = 100, b = 100, c = -100

10-What is the content of arr after executing the following code?

```
char arr[28];
int i;
for (i = 1; i <= 10; i++)
    *(arr + i) = 65 + i;
*(arr + i) = '\0';
```

a- BCDEFGHIJK

b- 656667686970717273 74

c- None of the answers.

d- ABCDEFGHD

e- abcdefghij

f- bcdefghijk

11- The content of the integer array ARR is (4,8,12,16, 20, 30, 40, 50, 60, 70, 80, 90, 100) What is the value of W after executing the following code

```
int* p = &ARR[3];
int W = *ARR + *p - 2 + 9;
```

a- 31 b- None of the other options

c- 27 d- 29

12-What is the content of arr after executing the following code?

```
char arr[20];
int i;
for (i = 0; i < 10; i++)
    *(arr + i) = 97 + i;
*(arr + i) = '\0';
```

a- ABCDEFGHIJ
b- ahedefghij
c- 065666768697071727374.
d- abcdefghij
e- BCDEFGHIJK
f- None of the answers

13- What does the following code do, given that x is initialized with integer values?

```
int row = 5;
int col = 5;
int x[row][col];
/*Intilization of x*/
for (int i = 0; i < row; i++)
    if (x[i][i] % 2 == 0)
        x[i][i] = 1;
    else if (x[i][i] % 2 != 0)
        x[i][i] = 0;
```

a- For all elements on x diagonal line, change its value to 1 if it's even or to 0 if it's odd.
b- For all elements on x diagonal line, change its value to 0 if it's even or to 1 it's odd.
c- For all elements in x, change its value to 1 if it's even or to 0 if it's odd
d- None of the answers
e- For all elements in x change its value to 0 if it's even or to 1 if it's odd

14-What values the variables a, b, and c can take such that the expression below is evaluated to true?

(!(a || b || c))

a- a = 0, b = 0, c = 0
b- a = 0, b = 100, c = 0
c- a = 100, b = 0, c = -100
d- a = 100, b = 100, c = -100

15-The following code snippet processes an NxN square integer array where N is odd. What does the code do?

```
for (int i = 0; i < N; i++)
    for (int j = 0; j < N; j++)
        if (j < i)
            sum += array[i][j];
cout << sum;
```

**a- The code sums the elements of the left diagonal **
b- The code sums the elements forming the triangle below the main diagonal
c- The code sums the elements of the right diagonal /
d- None of the other options
e- The code sums the elements forming the triangle above the main diagonal

---

16- How many times "hello" is printed in the below C++ code?

```
int n = 5;
while (n-- > 0) {
    if (n % 2 == 0)
        cout << "hello" << endl;
}
```

a- None of the other options
b- 3
c- 5
d- 2
e- 4

17-What is the value of variable x after executing the following code?

```
double y = 1.5, z = 2.5;
double x = ceil(2 * y) + y / z;
```

a- 3.6
b- 2
c- 3
d- None of the other options
e- 4

18- Given that myString is an alphanumerical string what does this code do?

```
srand(time(0));
for (int i = 0; i < myString.length(); i++)
    cout << myString[rand() % myString.length() / 2];
```

a- Each time the code executes, it prints the initial character a random number of times
b- Prints characters selected from the first half of the original string in random order
c- Prints characters from the original string in random order
d- None of the other options
e- Prints numbers between 0 and the string length in random order

---

19-Given the below array initialization, what is the content of data[0][1][1]?

int data[2][2][2] = { { { 1,2 } , { 3 , 4 } } , { { 4 , 3 } , { 2 , 1 } } };

a- None of the other options
b- 3
c- 4
d- 2
e- 1

20- Given the following code, what should be written instead of **L1** and **L2** such that the code sum of the first five elements in the array X:

```
int X[10];
int sum = 0;
for (int i = 0; i < 10; i++) {
    if (L1) {
        L2;
    }
    else {
        sum = sum + X[i];
    }
}
```

a- L1 = i<5 \ L2 = sum+=0
b- L1 = i>5 \ L2 = continue
c- L1 = i>=5 \ L2 = break
e- L1 = i<=5 \ L2 = continue

21- Which of the following options generates a random number between [-4,5] inclusive.

a- rand()%9-5
b- rand()%9-4
c- rand()%10-4
d- rand()%10-5

22- Which of the following function headers allows us to pass an integer array, multiply its elements by random values, then compute and return the array average?

```
a- int* arrayFunction(const int array[], int size, double& average);

b- int* arrayFunction(int array[], int size, double& average);

c- double arrayFunction(const int array[], int size);

d- double arrayFunction(int array[], int size);
```

23- Fill in the correct escape sequences in the string below such that the output will be:

Jerash Petra, and the Dead Sea are major tourist attractions in Jordan

```
cout << "Jerash, 1 Petra, and the Dead Sea are Major 2 tourist attractions in 3 Jordan";
```

```
a-  \n, \b, \t

b-  \b, \t, \n

c-  \t, \n, \b
```

24-Given the following code snippet, which of the following statement is correct?

```
string *s1,*s2;
string Name = "Ali", gender = "male";
s1 = &Name;
s2 = &gender;
cout << *s1 << " is " << *s2;
```

a- Compilation error
b- None of the answers
c- Runtime error
d- Ali is male
e- ali is male

25- The content of the integer array ARR is (4,8,12,16, 20, 30, 40, 50, 60, 70, 80, 90, 100) What is the value of W after executing the following code

```
int *p  = &ARR[3];
int W = *(p + 2) - *ARR + 2;
```

a- 31
b- None of the other options
c- 27
d- 29
e- 28

26- Given the following function

```
int ACT(int x, int y)
{
     if (y <= 1)
          return x;
     else
          return x * ACT(x, y - 2);
}
```

How many activation record does this recursive function if called ACT(7,2)?

a- 2 b- 4 c- 3 d- 1

27-Given that X is a one-dimensional array of size 10. Select from the given options for each blank such that the value of the variable sum equals the summation of the last 5 elements in the array

```
int sum = 0;
for (int i = 0; i < 10; i++)
{
    if (   1   )
        sum +=   2  ;
}
```

1- a)i != 5 b)i <= 5 c)i >= 5 d)i != 0

2- a) X[i] b) i c) 5

28- When using two signed short numbers in a program and their result stored in a variable of the same type, which of these operations never produces an overflow (result guaranteed to fit in the result variable)?

a- Addition
b- None of the other options
c- Subtraction
d- Division and Modulus
e- Multiplication

29- How many activation records does this recursive function create if it is called as fun(7,2) :

```
int fun(int x, int y)
{
    if (x == 0)
        return y;

    return fun(x - 1, x + y);
}
```

a- 6

b- 8

c- None of the other options

d- 5

e- 7

30-What is the output generated by the following code:

```
int x = 4;
for (int i = 0; i >= -1 * x; i--) {
    for (int j = 0; j >= i; j--) {
        cout << "*";
    }
    cout << "#";
}
```

a- *#**#***#****#

b- ****#***#**#*#

c- None of the other options

d- ****#****#****#****#

e- *#**#***#****#*****#

31-What is the output of the below C++ line of code?

```
cout << setprecision(7) << showpoint << 123.456789;
```

a- 123.4567000
b- 123.4567800
c- 123.4568
d- 123.4567900
e- 123.4678000
f- 1234567

32- Given that **mystring** is a cstring of size 39 and the pointer *ptrstores* the address of **mystring**. The value stored in **mystring** is entered by the user through the console. The following code snippet is part of a program that processes mystring What is the program output assuming that the user input is: **"We are finally done with the course!"**?

```
char mystring[40];
mystring[39] = NULL;

cin.getline(mystring, 39);
for (int i = 0; i < 39; i++) {
    if (*ptr == NULL)
        break;
    cout << *ptr;
    ++ptr;
}
```

a- We are f
b- We are finally done
c- We are finally done with the course!
d- W r ial oawt h ore

33- The single dimensional array **A** is initialized by the values:

{237, 925, 330, 434, 550, 123, 823, 423, 578, 623}

What is the value of variable sum after executing the following code?

```
int sum = 0;
int N = sizeof(A) / sizeof(A[0]);
for (int i = 0; i < N; i++)
    if (i % 2 == 1)
        sum += A[i];
```

a- 2528
b- 2518
c- 2548
d- None of the other options
e- 2538

1	A	12	D	23	B
2	B	13	A	24	D
3	1-a 2-b 3-c	14	A	25	E
4	D	15	B	26	A
5	A	16	B	27	1- c 2- a
6	A	17	A	28	D
7	C	18	B	29	B
8	1-B 2-C	19	b	30	E
9	A	20	C	31	C
10	A	21	C	32	C
11	C	22	D	33	A

اسئلة سنوات
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2021 فصل ثاني

1-Given the following class implementation. Choose the correct statement that prints the length of the **student1's fullName** in the main.

```
class Student {
public:
	int ID;
	double GPA;
	string fullName;
	char major[20];
	Student(int newID, string name, char newMajor[]) {
		ID = newID;
		fullName = name;
		strcpy(major, newMajor);
		GPA = 0;
	}
};

int main()
{


	Student student1(123456, "Abd-alkareem Saleh", "CE");
	Student student2();

}
```

```
a- cout << length.fullName << endl;
b- cout << student1(length.fullName) << endl;
c- cout << student1.fullName.length() << endl;
d- cout << strlen(student1.fullName) << endl;
e- cout << strlen.student1.fullName << endl
```

2-Which line will you add to the end of this code in order to get **60** as an output line?

```
int x = 12, y = 60;
do {
    cout << y<<" ";
    y = y - 4;
}
```

```
a- while (((y - x) % 1) == 0);
b- while (((y - x) % 3) != 0);
c- while (((y - x) % 4) != 0);
d- while (((y - x) % 5) != 0);
```

3- Which one of the following project building steps is involved when the program is internally translated to low level code?

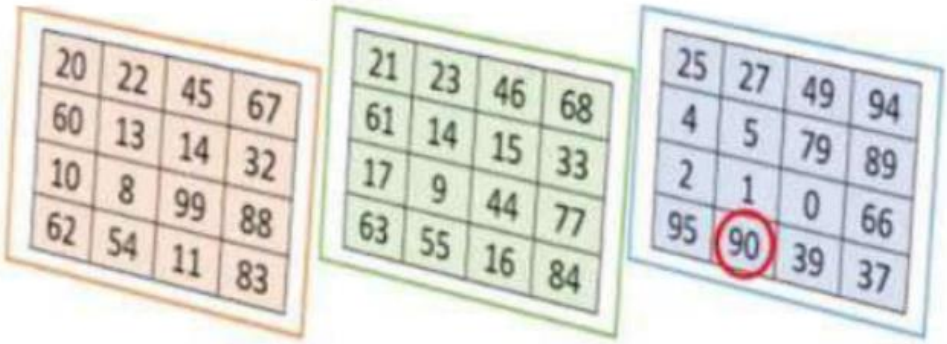
```
a- Compiler/Assembler
b- Pre-processor
c- All of the listed steps
d- Linker
```

4- Select the correct answer from the list of options for each blank such that the code initializes **the last five** elements of the one-dimensional array **ARR** with random numbers between **[-3,19]** inclusive

```
int ARR[10];
for (int i = 0; i <= 9; i++) {
    if( 1 )
        ARR[i]= 2
}
```

1- a) (i < 5) b) (i > 4) c) (i < 4) d) (i > 5) e) (true)
2- a) rand()%23-2 b) rand()%23-3 c) rand()%24-2 d) rand()%24-3

5- Given the following representation of a 3D matrix called **myArray3D** that is accessed from left to right.
Assume that indices follow the notation of **table, row, column**, respectively. What is the correct C++ statement that changes the value of the element circled in red to **50**?




```
a- myArray3D[2][3][1] -= 50;
b- myArray3D[3][1][2] -= 40;
c- myArray3D[1][2][3] -= 50;
d- myArray3D[2][3][1] -= 40;
e- myArray3D[1][2][3] += 50;
```

6- What type of **casting** is involved in the following C++ statements:

```
float n1 = 10.3;          // (1)
double n2 = 3.4;
float n3 = (float)n2; // (2)
```

1- a) Explicit casting with type widening
b) Implicit casting with type narrowing
c) Explicit casting with type narrowing
d) Implicit casting with type widening
e) No casting

2- a) Implicit casting with type widening
b) No casting
c) Explicit casting with type widening
d) Explicit casting with type narrowing
e) Implicit casting with type narrowing

7- What is the content of **myList** after executing the following code?

```
char myList[25];
for (count = 1; count < 10; count++)
    *(myList + count) = 65 + count;
*(myList + count) = '\0';
```

a- BCDEFGHIJKI

b- None of the answers.

c- BCDEFGHIJ

d- ABCDEFGHIJ

e- BCDEFGH

8- What does the output of the following code represent?

```
double value1 = 1.5, value2 = 2.5, value3 = 3.5, value4 = 4.5;
double* list[] = { &value1, &value2, &value3, &value4 };
cout << list[0];
cout << *list << endl;
```

a- The address of value3 and the address of value0.

b- The address of value1 and the address of value1.

c- The address of value3 and the address of value1.

d- The address of value4 and the address of value1.

e- None of the answers.

9- What does the following code do, given that **myArray** is initialized with random characters?

Note: left diagonal starts from the top-left corner to the bottom-right corner, and the right diagonal starts from the top-right corner to the bottom-left corner.

```
int row = 5;
int col = 7;
int i, j;
char myArray[row][col];
//initialization of myArray with random characters
for (i = 0; i < row; i++) {
    for (j = 0; j < col; j++) {
        if ((i % 2 == 0) || (j % 2 == 0))
            myArray[i][j] = '*';
    }
}
```

a- For each element on the even rows or on the even columns of myArray, change its value to *

b- For each element on the left diagonal of myArray, change its value to *.

c- For each element on the middle row and middle column of myArray, change its value to . *

d- None of the other answers.

e- For each element in *myArray*, change its value to * if it's value is odd.

f- for each element on the right diagonal of myArray, change its value to *.

10- The following C++ function is intended to count the number of positive values in an array. Remember that zero is not negative. If the array contains **{0, 2,-1, 4,-3,-7}** the count is three. complete the code by selecting the proper statement in each of the required lines.

```
int Process(int Array[], const int array_size) {
    int count = 0;
    (          1          )
    {
        if (2)
            count++;
    }
    return count;
}
```

1- a) `for (int i = 0; i < 10; i++)`
   b) `for (int i = 0; i < array_size; i++)`
   c) `for (int i = 1; i < Array; i++)`
   d) `for (int i = 0; Array[i] < array_size; i++)`

2- a) `if (Array[i] >= 0)`
   b) `if (Array[i] > 0)`
   c) `while (Array[i] <= 0)`
   d) `if (i < 0)`

11- Which one of the following statements **describes** the code below?

```
const int size = 5;

void Find(int array[][10], int size, int& val, int& rowIndex,
int& colIndex)
{
     val = array[0][0];
     for (int i = 0; i < size; i++) {
          for (int j = 0; j < 10; j++) {
               if (array[i][j] > val) {
                    val = array[i][j];
                    rowIndex = i;
                    colIndex = j;
               }
          }
     }
}
```

a- It takes a 2-dimensional Integer array with 5 rows and 10 columns as a parameter and returns the maximum value of that array and its location within the array as reference parameters.

b- It takes a 2-dimensional Integer array with 10 rows and 5 columns as a parameter and returns the maximum value of that array and its location within the array as value parameters.

c- It takes a 2-dimensional Integer array with 5 rows and 10 columns as a parameter t and returns the minimum value of that array and its location within the array as reference parameters.

d- It takes a 2-dimensional Integer array with 10 rows and 5 columns as a parameter and returns the minimum value of that array and its location within the array as value parameters.

12-Consider the following statement:

```
int y = !(12 > 5 || 3 >= 5 && 3 > x) ? 9 : 7;
```

What is the value of **y** if **x = 2** ?

a- None of the answers b- 9 c-7 d-3 e-2

13- Given the following recursive function:

```
bool toy(char x[], int m, int n) {
    if (n <= (m / 2))
        return true;
    else if (x[n] != x[m - n])
        return false;
    else
        return toy(x, m, n - 1);//line 8
}
```

Assume that function "toy" is called from the main:

```
char test[] = "revver";
cout << toy(test, 5, 5) << endl;
```

How many times **"Line 8"** in function **"toy"** is executed?

a- 5

b- 7

c- 3

d- 0

e- 1

f- 2

g- 4

14- Given the following code of the function maxListV1 that finds the maximum element in a one dimensional array.

```
int maxListV1(int array[], int size)
{
     int max = array[0];
     for (int i = 1; i < size; i++)
          if (array[i] > max)
               max = array[i];

     return max;
}
```

Complete the code below of the function maxListV2 that dose the exact functionality as maxListV1:

```
int maxListV2(     1      ){
     int max = *array;
     for (int i = 1; i < size; i++)
          if (*(array + i) > max)
               2

     return max;
}

int main()
{
     int arr[] = { 1,2,3,4,5 };
     3      ;//Call FUNCTION maxListV2
}
```

```
1-  a- Int*array[] , int size
    b- Int Parray, int size
    c- Int *array, int *size
    d- Int *array, int size

2- a- max=*array+i;
   b- max=array+ *i;
   c- max=(array+i);
   d- max=*(array+i);

3- a- cout<<maxListV2(*arr[],5)
   b- cout<<maxListV2(arr,5)
   c- cout<<maxListV2(*arr,5);
   d- cout<<maxListV2(arr[],5);
```

15- select the correct option from the available options from each blank such that output is as follows:

Output is:
abbbb
aabbb
aaabb
aaaab
aaaaa

```
//code Start Here
for (int i = 0; i < 5; i++) {
     for (int j = 0;     1     ; j++) {
          if (     2     )
               cout << "b";
          else
               cout << "a";
     }
  cout<<endl;
}
```

1- a) j < 7 , b) j < 4 , c) j < 5 , d) j < 8

2- a) j > i , b) i < 5 , c) j < 4 , d) i < 3

16- Given the following class definition for car objects:

```
class Car {
private:
     string Make;
public:
     long long Vin;

     Car() {
          Vin = -1;
          Make = "None";
     }
     Car(long long X) {
          Vin = X;
          Make = "None";
     }
     Car(string X) {
          Vin = -1;
          Make = X;
     }
     Car(long long X, string Y) {
          Vin = X;
          Make = Y;
     }
     void setMake(string X) {
          Make = X;
     }
     string getMake() {
          return Make;
     }
};
```

Complete the code below which is expected to define an object of class **"Car".** After the object is defined, its **"Vin"** should be updated to **123456789** and its **"Make"** should be **displayed** on the Console.

```
int main()
{
    1
    2
    3
}
```

1-
```
a)Car car1(default, default);
b)Car car1();
c)Car car1;
d)Car car1(default);
```

2-
```
a)car1.Vin = 123456789;
b)car1.setVin = 123456789;
c)car1.getVin(123456789);
d)car1.setVin(123456789);
e)Car car1(123456789);
```

3-
```
a)cout << Make;
b)cout << car1.getMake;
c)cout << car1.getMake();
d)cout << car1.Make;
e)cout << car1.setMake();
```

17-Choose from the multiple choices in the blanks below the correct answers such that the for loop mirrors the second half of the word into the first

(ABCD1234 → 43211234);

```
string s = "ABCD1234";
for ( 1 ; 2 ; 3 ){
    s[i] = s[j - 1];
}
```

1- a) i=0, j=s.length()/2

b) i=0,j=s.length()

c) i=s.length()/2-1, j= s.length()/2

2- a) j < s.length()/2

b) i < s.length()

c) i >= 0

d) i < s.length()/2

3- a) i -- , j++

b) i++ , j++

c) i++ , j--

d) i-- , j—

18-What are the final value of variables a and c based on the following code:

```
int a = 5;
int b = 6;
int c = 10;

int* aptr = &a;
int* bptr = &b;
int* cptr = &c;

*aptr = *aptr + *bptr;
c = c - *bptr;
```

a- value of a:6 | Value of c:5

b- Value of a:11 | Value of c:4

c- Value of a:11 | Value of c:10

The Answers:

1	C	7	C	13	C
2	C	8	B	14	1-D 2-D 3-B
3	A	9	A	15	1-C 2-A
4	1-B 2-B	10	1-B 2-A	16	1-B 2-A 3-C
5	D	11	A	17	1-B 2-D 3-C
6	1-E 2-D	12	C	18	B

اسئلة سنوات
فاينل
2021 فصل صيفي

1- Given the following code snippet. Choose the correct statement that makes the content of the **message** :

"Summer2021"

```
char myString[20] = "Summer 2021!";

char newString[40] = "2021 is not a leap year";

char message[30] = "";
```

a- strncat(strncpy(myString,message,6),newString,4);
b- strncat(strncpy(message, newString,6), myString,4);
c- strncat(strncpy(message, myString,6),newString,4);
d- strncat(strncpy(message, myString,6),newString,5);
e- strncat(strncpy(message, myString,6), myString,5);

2- Choose the correct choice from the blanks so that code gives 321 as an output :

```
void f( ) {
        1
cout << i;
        2
}
int main ( ) {
      f();
}
```

1- a) int i = 3 b) static int i =3 ;

2- a) if(i--) f( ); b) if(i++) f( );
c) if(i!=0) f( ); c) if(i==0) f( );

3- Suppose we have a floating-point number that has exactly four digits to the left of the decimal point and exactly four digits to the right of the decimal point (e.g. 1542.6591).

The sequence of instructions that can be used to extract the rightmost two integer digits(e.g. 1542.6591), and the first two decimal digits(e.g:1542.6591), then form the integer number **6542** from them is :

```
double m = 1542.6591;
```

1

2

3

1) a) int n = (int)(m/100); b) int n = m*100%100;

   c) int n = ((int)m)/100; d) int n = ((int)m)% 100;

2) a) int q = (int) (m*100)/100

   b) int q = (int) (m*100)%100;

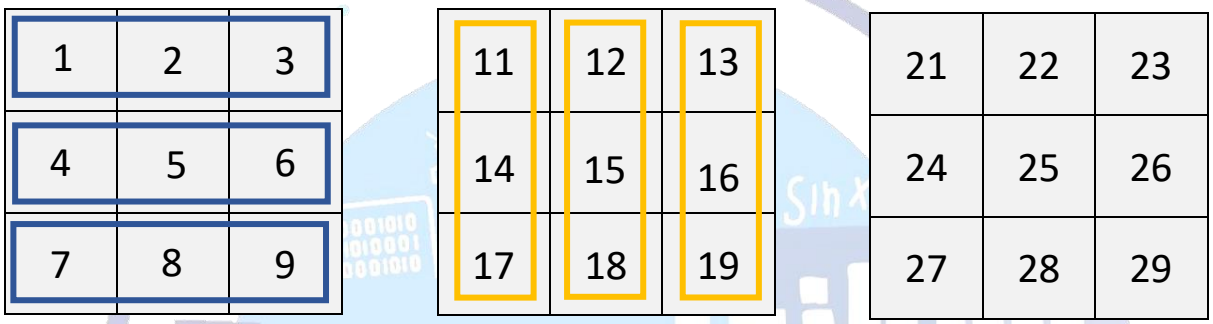
   c) int q = (int) (m/100)*100;

3) a) cout<< q * 100 + n; b) cout<< n*100 + q;

4- Complete the code below by choosing the correct variables to index the 3D array m such that

we multiply the first row of the first slice by the first column in the middle slice, then the second row of the first slice by the second column in the middle slice, and so on.

Note: Assume the 3D array accessing order we learnt in class.




```
int n[9];
int count = 0;
for( int i = 0 ; i<3; i++)
    for( int j =0; j <3; j++) {
        n[count] = m [1] [2] [3] * m [4] [5] [6];
        count++;
    }
```

For all blanks (1 – 6) choose the answer from the following:

a) 0 b) 1 c) 2 d) 3 e) i f) j

5- which one of the following codes gives 2.5 as an output:

a)
```
int x = 2;
float r, y = 5.0;
r = y / x;
cout << r;
```

b)
```
int r, x = 2;
float y = 5;
r = y % x;
cout << r;
```

c)
```
int r, x = 2;
float r, y = 5.0;
r = y / x;
cout << r;
```

b)
```
int r, x = 2;
float y = 5;
r = x % y;
cout << r;
```

6- choose the correct choice from the blanks so that Code gives 62 as an output :

int a[ ] = {10, 20, 40);

1

2

1)

a) a[2] = a[2] + a[1]

b) a[0] += a[2]

c) a[2] += a[1] + a[1] / a[0];

d) a[2] += a[1] + a[1] % a[0];

2)

a) cout<< *a b) cout<<*a+1 c)cout<<a+1 d) cout<<*(a+1)

e) cout<< a f) cout<<*a+2 g)cout<<a+2 h) cout<<*(a+2)

7) choose the correct choice from the blanks so that code gives the following output:

```
1

4 5

7 8 9
```

```
int a = 0, i, j;
int arr[3][3] = {
    {1,2,3},{4,5,6},{7,8,9}
};

for (int i = 0; i < 3; i++) {
    for (int j = 0; j < 3; j++) {

        if (      1      )
            cout << arr[i][j] << " " << " ";
        else
              2
    }
      3
}
```

1) a) i+j <= 2 b) i >= j c) i <= j d) i+j >= 2

2) a) leave empty b) cout<<" "<<" "<<" ";

3) a) leave empty b) cout<<endl;

8) what is the output of the following sequence of instructions :

```
string s = "Hell\0ohi";
char c[] = "hell\\0ohi";
cout << s.size();
cout << (strlen(c));
```

a) 55 b) 49 c) 96 d) 94 e) 109

9) given that **W** is a one-dimensional array of size 10. Select from the given options for each blank such that value of the variable **MUL** equals the **summation** of all the elements with value less than 7

```
int MUL = 0;
for (int i = 0; i < 10; i++) {
    if ( 1 ) {
        MUL += 2
    }
}
```

1) a) i >= 7 b) w[i] < 7 c) i<= 7
   d) i > 7 e) w[i] <= 7 f) i < 7

2) a) i b) 1 c) w[i]

10) Given the following recursive function, what is the maximum number of activation records created at any one time in the stack when the program is run

```
bool processing(int x[], int start, int end)
{

    if (start > end)
        return false;
    else
        return processing(x, start +1, end -1);
}
```

Suppose that main call function :

```
int test[]={1,2,3,4,5,6,7,8,9,10,11,12};
processing(test,4,9);
```

a) 4 b) 9 c) 5 d) 12 e) no records

11) which line will you add to the end of this code in order to get output line as : **30 25 20 15 10**

```
int x = 10, y = 30;
do {
    cout << y << " ";
    y = y - 5;

}while(          1          );
```

a) (y-x-10) > 0 b) (y-x) > 0

c) (y-x-10) >= 0 d) (y-x) >=0

12) select from the options such that the output of the program is **21:**

```
int x = 10;
int y = 1;

int main()
{
    int x = 5;
    int y = 6;
    cout << 2 * 1 + 2 ;

}
```

1+2) a) ::x b) x c) y d) ::y

13) what are the contents of the integer variables **x** and **y** after executing the following code successfully?

```
    int x = 1, y = 2;
    int* p1 = &x, * p2 = &y;
    *p2 = 10 * ceil(y / x) - 5 * floor(x / y);
    *p1 = *p2 % 3 + abs(*p2);
```

a) x = -22, y = -10 b) x = 22, y = 11

c) x = 22, y = 20 d) x = 20, y = 22

14) given the following code snippet. Which of the following of the following is a correct declaration for variable inside the function test such that the output of the program is as follows:

2 2

2 3

2 4

```
inline void test() {
    [          1          ]
    cout << ++var1 << " " << ++var2 << endl;
}

int main()
{
    for (int i = 0; i < 3; i++)
        test();
}
```

a) static int var1 = 1

static int var2 = 1;

b) int var1 = 1;

static int var2 = 1;

c) static int var1 = 1;

int var2 = 1;

d) int var1 = 1;

int var2 = 1;

15) given the following function prototype of the function copyColumn that copies all the elements in a specific column in a 2D array to a 1D array. Which of the following is a correct invocation of the function copyColumn?

```
const int cols = 4;
bool copyColumn(int arg1[], int arg2[][cols],
                int colIndex, int rows);

int main()
{
     const int rows = 6;
     int list[cols];
     int matrix[rows][cols];

     // call the function
}
```

a) `cout<< copyColumn(list, matrix, cols, rows);`

b) `copyColumn(matrix, list, cols, 3);`

c) `cout<< copyColumn(list, matrix, 3, rows);`

d) `cout<< copyColumn(list, matrix, cols, 4);`

e) `cout<< copyColumn(matrix, list, rows, 3);`

16) given a two-dimensional array called "Weight" which contains the Weights over 12 months for 5 different people. Each column in the array contains the Weight over 12 months for each person.

Which of the following codes computes the maximum weight for each person over the 12 months period and prints it out on the console.

a)
```
int Weight[5][12];
int maxW;
for (int i = 0; i < 12; i++) {
     maxW = -100;
     for (int j = 0; j < 5; j++) {
          if (Weight[j][j] > maxW)
               maxW = Weight[i][j];
     }
     cout << maxW << endl;
}
```

b)
```
int Weight[12][5];
int maxW;
for (int i = 0; i < 5; i++) {
     maxW = 0;
     for (int j = 0; j < 12; j++) {
          if (Weight[j][j] > maxW)
               maxW = Weight[j][i];
     }
     cout << maxW << endl;
}
```

c)
```
int Weight[5][12];
int maxW;
for (int i = 0; i < 5; i++) {
     maxW = -100;
     for (int j = 0; j < 12; j++) {
          if (Weight[i][j] > maxW)
               maxW = Weight[i][j];
     }
     cout << maxW << endl;
}
```

17) Which one of these UML diagrams represents the class Rocket for which the value of the variable capacity cannot be changed after initialization ?

Assuming that any function and any constructor only updates the respective variable(s) associated with it.

a)

Rocket
+ speed: double - mass: double - capacity: int
+ calculateSpeed(): void + setCapacity(newCapacity: int) + setMass(newMass: double) + Rocket(newCapacity: int)

b)

Rocket
- speed: double + mass: double + capacity: int
- calculateSpeed(): void + setCapacity(newCapacity: int) + setMass(newMass: double) + Rocket(newMass: double, newCapacity: int)

c)

Rocket
- speed: double + mass: double + capacity: int
- calculateSpeed(): void - setSpeed(newSpeed: double) + getSpeed(newSpeed : double) + Rocket(newSpeed: double)

d)

Rocket
- speed: double + mass: double - capacity: int
+ calculateSpeed(): void + setSpeed(newSpeed: double) + getSpeed(newSpeed: double) + Rocket(newCapacity: int)

The Answers:

1	c	7	1- b 2- a 3- b	13	c
2	1- b 2- a	8	b	14	b
3	1- d 2- b 3- a	9	1- b 2- c	15	c
4	1- e | 2- f | 3- a 4- f | 5- e | 6- b	10	c	16	c
5	a	11	d	17	d
6	1-c 2-h	12	1- a 2- d		