The British University in Egypt **Faculty of Informatics and Computer Science** **Programming Section**	The BRITISH UNIVERSITY IN EGYPT
Module Name: Introduction Programming	**Module code:** 22CSCI01P
File Type: Revision on 1. Functions 2. Files 3. Arrays	**Outcomes:** 1. Tracing 2. Programming

1. Tracing

1) What is the output of the following program, if the user enters the word "Egypt"?

```
1.  #include<iostream>
2.  using namespace std;
3.  int i = 1, j = 2, k = 3;
4.  double func(int i, int &j, int &e){
5.          return ++i + ++j + ++e;
6.  }
7.  int main(){
8.          int j = 3;
9.          double d = func(i, j, k);
10.         cout<<d;
11.         return 0;
12. }
```

2) What is the output if the user enters "George" then "InformationSystemInstitute"?

```
1.  #include <iostream>
2.  #include <fstream>
3.  #include <string>
4.  using namespace std;
5.  void main() {
6.     string filename = "Friends.txt", buffer;
7.     fstream inputfile, outputfile;
8.     outputfile.open(filename, ios::out);
9.     cout << "what is your name?";  cin >> buffer;
10.    outputfile << buffer << endl;
11.    cout << "what is your university?";  cin >> buffer;
12.    outputfile << buffer << endl;
13.    outputfile.close();
14.    inputfile.open(filename, ios::in);
15.    inputfile.seekg(5, ios::beg);
16.    int length = inputfile.tellg();
17.    cout << length << "*";
18.    inputfile >> buffer; cout << buffer << endl;
19.    inputfile.close();
20. }
```

3) What is the output of the following Program? If a file of name “Friends.txt” exists and contains only one line: "Information System Security and analysis of algorithms."

```
1. #include <iostream>
2. #include <fstream>
3. #include <string>
4. using namespace std;
5. void main() {
6.     string filename = "Friends.txt", buffer;
7.     fstream inputfile;
8.     inputfile.open(filename, ios::in);
9.     inputfile.seekg(9, ios::beg);
10.    inputfile.seekg(4, ios::cur);
11.    inputfile >> buffer; cout << buffer << endl;
12.    inputfile.close();
13. }
```

4) What is the output of the following program?

```
1. #include <iostream>
2. #include <fstream>
3. #include <string>
4. using namespace std;
5. int main() {
6.     ofstream myfile1;
7.     myfile1.open("data1.txt");
8.     myfile1<<"He is good";
9.     myfile1.close();
10.        string line[10];
11.        ifstream myfile2("data1.txt");
12.        for (int i = 0; i < 5; i++){
13.                if (myfile2.is_open())
14.                        myfile2>>line[i];
15.                cout << line[i] << " ";
16.                myfile2.close();
17.        }
18.        return 0;
19. }
```

5) What is the output of the following program, assume an empty demofile.txt exists in the same folder of the c++ project?

```
1.  #include <iostream>
2.  #include <fstream>
3.  #include <string>
4.  using namespace std;
5.  int main(){
6.          fstream dataFile;
7.          string name;
8.          dataFile.open("demofile.txt", ios::out | ios::in);
9.          dataFile<<"string1"<<"\n";
10.         dataFile<<"string2"<<"\n";
11.         dataFile >> name;
12.         cout<<name<<" ";
13.         if(dataFile.eof()) cout<<"END";
14.         dataFile.close();
15.         return 0;
16.}
```

6) What is the output of the following program?

```
1.  #include<iostream>
2.  #include<string>
3.  using namespace std;
4.  void main(){
5.  bool r[5] = { true, false, true };
6.  string name = "BUE";
7.  cout << (sizeof(int)+sizeof(bool)+sizeof(name.at(0)) + sizeof(r));
8.  }
```

7) What is the output of the following program?

```
1.  #include <iostream>
2.  #include <string>
3.  using namespace std;
4.  void main () {
5.    string name1 = "Data";
6.    char name2[4] = {'I', 'n', 'f', 'o'};
7.    char name3[] = "Thin";
8.    name1=name1+name2+name3;
9.    cout<<name1;
10.  }
```

8) What is the output of the following program?

```
1.  #include <iostream>
2.  using namespace std;
3.  int main(){
4.      int d[]={1, 2, 4, 5, 7, 9, 10};
5.      for(int i = 0; i<sizeof(d); i=i+4){
6.              cout<<d[i/4]<<"-";
7.              continue;
8.              cout<<d[--i]<<"-";
9.          }
10.}
```

9) What is the output of the following program?

```
1.  #include<iostream>
2.  using namespace std;
3.  int main(){
4.          int arr[] = { 1, 2, 3};    string name = "Alye";
5.          cout << sizeof(arr)+sizeof(name.at(0)) + sizeof(arr[0]);
6.          return 0;
7.  }
```

10) What is the output of the following program?

```
1.  #include <iostream>
2.  using namespace std;
3.  int main(){
4.      string s = "Faster";
5.      char as[] = "Safer";
6.      int i = 1;
7.      if (as[i] == s.at(i))
8.        cout << as[i++] << "," << as[++i] << " at " << i << endl;
9.      else
10.       cout << "nothing";
11.     return 0;
12.}
```

11) What is the output of the following program?

```
1.  #include<iostream>
2.  int main(){
3.          bool r[5] = { true, false, true };
4.          for(int i = 0; i < 5; i++)
5.                  std::cout << r[i];
6.          return 0;
7.  }
```

12) What is the output of the following program, if the user enters the word “Egypt”?

```
1.  #include <iostream>
2.  using namespace std;
3.  int main(){
4.      const int LENGTH = 2;
5.      char message[LENGTH];
6.      cout << "Enter a sentence" << endl;
7.      cin >> message;
8.      cout << message << endl;
9.      return 0;
10. }
```

13) What is the output of the following program?

```
1.  #include <iostream>
2.  #include <string>
3.  using namespace std;
4.  int main(){
5.          const int leng = 10;
6.          string s = "1234567890";
7.          int t = 0;
8.          int d[leng];
9.          for (int i = 0; i < leng; i++){
10.                 if (i % 3 == 0) d[i] = stoi(s.substr(i, 1));
11.                 else d[i] = d[i-1] % 2;
12.                 t += d[i];
13.         }
14.         cout << t;
15.         return 0;
16.}
```

14) What is the output of the following program?

```
1.  #include<iostream>
2.  using namespace std;
3.  void function(char arr[], int s){
4.          for(int i = 0; i < s - 1; i++){
5.              arr[i] = arr[i+1];
6.          }
7.  }
8.  int main(){
9.      const int size = 7;
10.         char title[] = "Titanic";
11.         function(title, size);
12.         for(int i = 0; i < sizeof(title) - 1; i++){
13.             title[i] = title[i+1];
14.         }
15.         cout << title <<  endl;
16.         return 0;
17. }
```

15) What is the output of the following program?

```
1.  #include <iostream>
2.  using namespace std;
3.  int x1 = 2;
4.  int change(int x2, int &x3){
5.          return x1 + x2 + ++x3;
6.  }
7.  int main(){
8.          int x4[4] = { 1, 2, 3, 0 };
9.          int x5 = 2; x1 = 1;
10.         int x6 = change(x4[x1], x5);
11.         cout << x6 + x5 << endl;
12.         return 0;
13.}
```

16) What is the output of the following program?

```
1.  #include <iostream>
2.  using namespace std;
3.  const int a = 7;
4.  void calc(int arr[], int g, int t){
5.          t = arr[g];
6.          arr[g] = arr[g + 1];
7.          arr[g + 1] = t;
8.
9.  }
10. void main(){
11.         int array[a] = {3, 4, 7, 1, 9, 1, 6};
12.         calc(array, 3, 2);
13.         calc(array, 5, 4);
14.         for (int i = (a-1); i >= 0; i--)
15.         cout <<  array[i] << " ";
16.         cout << endl;
17.}
```

17) What is the output of the following program?

```
1.  #include <iostream>
2.  #include <string>
3.  #include <fstream>
4.  using namespace std;
5.  string filename = "example.txt";
6.  int main() {
7.          string buffer = "";
8.          string ArrOrder[] =
9.                  { "none", "first", "second", "third", "fourth", "fifth" };
10.         fstream myfile(filename, ios::out);
11.         for (int i = 0; i <= 5; i++)
12.                 myfile << ArrOrder[i] << (i == 5 ? "\n" : ", ");
13.         myfile.close();
14.         fstream inputfile;
15.         inputfile.open(filename, ios::in);
16.         inputfile.seekg(6, ios::beg);
17.         inputfile.seekg(6, ios::cur);
18.         int p = inputfile.tellg();
19.         inputfile >> buffer;
20.         cout << buffer << " - " << p << endl;
21.         inputfile.close();
22.         return 0;
23.}
```

18) What is the output of the following program?

```
1.  #include <iostream>
2.  #include <string>
3.  #include <fstream>
4.  using namespace std;
5.  string probFile = "example.txt";
6.  const int numOfStr = 6;
7.  int main() {
8.          string ArrOrder[numOfStr];
9.          ofstream yofile(probFile);
10.         yofile << "none,\tfirst,\tsecond,\tthird,\tfourth,\tfifth";
11.         //yofile.close();
12.         ifstream myfile(probFile);
13.         for (int i = 0; i < numOfStr; i++)
14.                 myfile >> ArrOrder[i];
15.         myfile.close();
16.         for (int i = 0; i < numOfStr; i++)
17.                 cout << ArrOrder[i];
18.         return 0;
19.}
```

2. Programming

C++ Array [29 exercises with solution in the corresponding links]

C++ Array - Exercises, Practice, Solution - w3resource

[An editor is available at the bottom of the page to write and execute the scripts.]

1. Write a C++ program to find the largest element of a given array of integers.
Go to the editor Click me to see the sample solution

2. Write a C++ program to find the largest three elements in an array.
Go to the editor Click me to see the sample solution

3. Write a C++ program to find second largest element in a given array of integers.
Go to the editor Click me to see the sample solution

4. Write a C++ program to find k largest elements in a given array of integers.
Go to the editor Click me to see the sample solution

5. Write a C++ program to find the second smallest elements in a given array of integers.
Go to the editor Click me to see the sample solution

6. Write a C++ program to find all elements in array of integers which have at-least two greater elements. Go to the editor Click me to see the sample solution

7. Write a C++ program to find the most occurring element in an array of integers. Go to the editor Click me to see the sample solution

8. Write a C++ program to find the next greater element of every element of a given array of integers. Ignore those elements which have no greater element. Go to the editor Click me to see the sample solution

9. Write a C++ program to sort a given unsorted array of integers, in wave form. Go to the editor
Note: An array is in wave form when array[0] >= array[1] <= array[2] >= array[3] <= array[4] >= . . . .
Click me to see the sample solution

10. Write a C++ program to find the smallest element missing in a sorted array. Go to the editor Click me to see the sample solution

11. Write a C++ program to update every array element by multiplication of next and previous values of a given array of integers. Go to the editor Click me to see the sample solution

12. Write a C++ program to rearrange the elements of a given array of integers in zig-zag fashion way. Go to the editor
Note: The format zig-zag array in form a < b > c < d > e < f.
Click me to see the sample solution

13. Write a C++ program to separate even and odd numbers of an array of integers. Put all even numbers first, and then odd numbers. Go to the editor Click me to see the sample solution

14. Write a C++ program to separate 0s and 1s from a given array of values 0 and 1. Go to the editor Click me to see the sample solution

15. Write a C++ program to rearrange a given sorted array of positive integers. Go to the editor
Note: In final array, first element should be maximum value, second minimum value, third second maximum value , fourth second minimum value, fifth third maximum and so on.
Click me to see the sample solution

16. Write a C++ program to sort a given array of 0s, 1s and 2s. In the final array put all 0s first, then all 1s and all 2s in last. Go to the editor Click me to see the sample solution

17. Write a C++ program to sort (in descending order) an array of distinct elements according to absolute difference of array elements and with a given value. Go to the editor Click me to see the sample solution

18. Write a C++ program to move all negative elements of an array of integers to the end of the array without changing the order of positive element and negative element. Go to the editor Click me to see the sample solution

19. Write a C++ program to find a number which occurs odd number of times of a given array of positive integers. In the said array all numbers occur even number of times. Go to the editor Click me to see the sample solution

20. Write a C++ program to count the number of occurrences of given number in a sorted array of integers. Go to the editor Click me to see the sample solution

21. Write a C++ program to find the two repeating elements in a given array of integers. Go to the editor Click me to see the sample solution

22. Write a C++ program to find the missing element from two given arrays of integers except one element. Go to the editor Click me to see the sample solution

23. Write a C++ program to find the element that appears once in an array of integers and every other element appears twice. Go to the editor Click me to see the sample solution

24. Write a C++ program to find the first repeating element in an array of integers. Go to the editor Click me to see the sample solution
25. Write a C++ program to find and print all common elements in three sorted arrays of integers. Go to the editor Click me to see the sample solution
26. Write a C++ program to find and print all unique elements of a given array of integers. Go to the editor Click me to see the sample solution
27. Write a C++ program to find the number of pairs of integers in a given array of integers whose sum is equal to a specified number. Go to the editor Click me to see the sample solution
28. Write a C++ program to arrange the numbers of a given array in a way that the sum of some numbers equal the largest number in the array. Go to the editor Click me to see the sample solution
29. Write a C++ program to find the second lowest and highest numbers in a given array. Go to the editor Click me to see the sample solution