CFJ PART 1 – BASIC C/C++
Exercise Sheet 2 – Sample Solutions

1.
```cpp
#include <iostream.h>

//Program that adds vectors – in this case with 3 elements
const int SIZE = 3;
int a[SIZE] = {2,3,4};
int b[SIZE] = {8,4,19};
int c[SIZE] = {0,0,0};

void addVectors(){
      for(int i=0; i<SIZE; i++) { c[i] = a[i] + b[i]; }
}

void displayVector(int vector[]){
      cout << "Vector is [";
      for(int i=0; i<SIZE; i++) { cout << " " << vector[i] << " ";}
      cout << "]\n";
}

int main(){
      addVectors();
      displayVector(c);
}
```

2.
```cpp
#include <iostream.h>

int main(){

      int userInput[100];
      int i=0;

      cout << "Please enter a list of integers. Enter zero to
end.\n";

      do {
          cout << "Number " << i+1 << " : ";
          cin >> userInput[i];
      } while (userInput[i++] != 0);

      cout << "Numbers were -";
      for(i=0; userInput[i] != 0; i++) { cout << " " <<
userInput[i];}
      cout << endl;
}
```

3.
```cpp
#include <iostream.h>

const int SIZE = 100;

void display(int array[]){
```

```
        for(int i=0; array[i] != 0; i++) {

                cout << array[i] << " : ";
                for(int j=0; j<array[i]; j++) cout << "*";
                cout << endl;
        }
}


int main(){
        int userInput[SIZE];
        int i=0;

        cout << "Please enter a list of integers. Enter zero to
end.\n";

        do {
            cout << "Number " << i+1 << " : ";
          cin >> userInput[i];
        } while (userInput[i++] != 0);

        cout << endl;
        display(userInput);
}
```

4.

```
#include <iostream.h>

int factorial(int n){return  n<0 ? 0 : n<2 ? 1 : n*factorial(n-1);}

int main()
{
        for(int count=1; count<=12; count++){
                cout << "Factorial of " << count << " is " <<
factorial(count) << endl;
        }
}
```

5.

```
#include <iostream.h>

int strlen(const char str[]){
        int i;
        for(i=0; str[i] != '\0'; i++);
        return i;
}

int main()
{
        char userInput[100];
        cout << "Please enter your favourite word : ";
        cin >> userInput;
        cout << "The word " << userInput << " has " <<
strlen(userInput) << " letters.\n";

        return 0;
}
```

6.

```cpp
#include <iostream.h>

int strlen(const char str[]){
      int i;
      for(i=0; str[i] != '\0'; i++);
      return i;
}


bool isPalindrome(char _input[]){

      int n= strlen(_input);
      for(int i=0; i<=n; i++) {
            if (_input[i] != _input[n-i-1]) return false;
      }
      return true;
}


int main()
{
      char input[100];

      cout << "Please enter a word to be checked:\n";
      cin >> input;

      cout << "The word " << input << " is";
      if (!isPalindrome(input)) cout << " not";
      cout << " a palindrome" << endl;

      return 0;
}
```

7.

```cpp
#include <iostream.h>

//Display the first 12 Factorials in sequence
int main()
{
      int total = 1;

      for(int count=1; count<=12; count++){

            cout << "Factorial of " << count << " is ";
            cout << (total = total * count) << endl;
      }
}
```