National University of Computer and Emerging Sciences, Lahore Campus

Course Name:	Introduction to Computing	Course Code:	CS101
Program:	BS(CS)	Semester:	Spring 2018
Duration:	1 hr	Total Marks:	25
Paper Date:	Thursday, 12 Apr 2018	Weight	15
Section:	ALL	Page(s):	4
Exam Type:	Sessional 2	Roll No.	

Instruction/Notes: 1. Solve the exam on this question paper. No rough sheets allowed.

Question # 1: Write a C++ program that takes as input a sentence which is stored in character array and removes all the characters except the English Alphabets (A-Z and a-z), spaces and full stop. Note that you cannot use a second array for this. **(Marks: 15)**

Skeleton and a sample run of the program that performs these tasks is given below**.**

```
#include <iostream>
using namespace std;

// Part a) Write Prototype of Functions Here

void Input(char str[]);
void Remove_Junk(char str[]);
bool compare_char(char ch);



int main() {
     char Str[100]={'\0'};
     cout<<"Enter the String: "<<endl;
     Input (Str); // for input

     Cout<< Str << endl; // Print before junk is removed

     Remove_Junk (Str);
     Cout<< Str << endl; // Print after junk is removed
     return 0;
}
```

Sample Run:

For Example if Input Array is: T,h'is, is m%,y fi%%rs,t wo(rl)d*.

The Output after removing junk should be: This is my first world.

Part b) In the space provided below, write C++ code of **Input (str)**.

```
void Input(char str[]){
     cin.get(str, 100);
}
```

Part c) In the space provided below, write C++ code for a compare function which will check, if given character belongs to English Alphabets (A-Z and a-z), spaces and full stop.

This function will be used in remove_Junk function.

```
void Remove_Junk(char str[]){
     for (int i = 0; str[i] != '\0'; i++){
          if (!compare_char(str[i]))
          {
               for (int j = i; str[j] != '\0'; j++)
                    str[j] = str[j + 1];
               i--;
          }
     }
}
```

Part d) In the space provided below, write C++ code of **Remove_Junk(Str)**.

```
bool compare_char(char ch){
if (ch == '.' || ch == ' ' || (ch >= 65 && ch <= 90) || (ch >=
97 && ch <= 122))
          return true;
     else
          return false;
}
```

```
Press any key to continue . . .
```

```
Press any key to continue . . .
```

Question # 2: Write the output of the following program. **(Marks: 15)**

```cpp
#include<iostream>
using namespace std;

void mystery1(int array1[], int n1, int &index);
void mystery2(int array2[], int a2[], int n2, int index2);
void mystery3(int array3[], int n3, int index3);
void mystery4(int array4[], int array3[], int index3);

int main(){
	int k = 3;
	int arr[5] = { 1, 2, 3, 4, 5 };

	mystery1(arr, 5, k);

	for (int i = 0; i<5; i++)
		cout << arr[i] << " ";

	cout << "\n Value of k is " << k <<endl;
	return 0;
}

void mystery1(int array1[], int n1, int &index){
	const int MAXOFFSET = 100;
	int temp[MAXOFFSET];
	if (index > 0)
	{
		mystery2(temp, array1, n1, index);
		mystery3(array1, n1, index);
		mystery4(temp, array1, index);
	}
}

void mystery2(int array2[], int a2[], int n2, int index2){
	for (int j = 0; j<index2; j++)
		array2[j] = a2[n2 - index2 + j];

}

void mystery3(int array3[], int n3, int index3){
	for (int i = n3 - 1; i >= index3; i--)
	{
		array3[i] = array3[i - index3];
		index3++;
	}
}

void mystery4(int array4[], int array3[], int index3){
	for (int i = 0; i<index3; i++)
		array3[i] = array4[i];
}
```

Output: