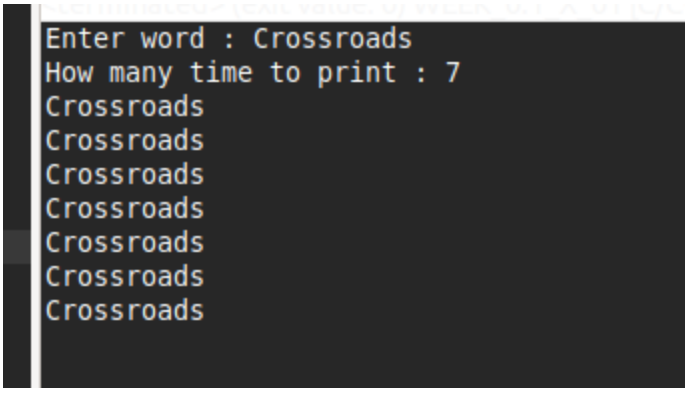
Week 0: Extra Assignments

1. Read the word “Crossroads” from the user and Print the word “Crossroads” Less Than 8 times without using any loop or goto statement.

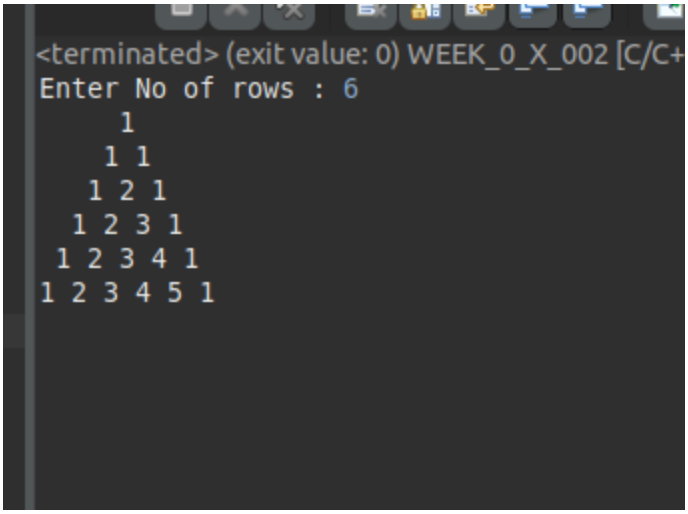
```
//Recursion
#include <stdio.h>
#include <stdlib.h>
void recurFun(char word[], int lim){
    if(lim>1){
       printf("%s\n",word);
       recurFun(word,lim-1);
    }else{
       printf("%s",word);
    }
}
int main(void) {
    int limit;
    char text[20];
    printf("Enter word : ");
    scanf("%s",text);
    printf("How many time to print : ");
    scanf("%d",&limit);
    recurFun(text,limit);
    return EXIT_SUCCESS;
}
```



2. Write a Program for pattern shown below

```
        1
      1 1
    1 2 1
  1 2 3 1
1 2 3 4 1
1 2 3 4 5 1
```

```
//NUMBER PYRAMID
#include <stdio.h>
#include <stdlib.h>
int main(void) {
   int row,i,j;
   printf("Enter No of rows : ");
   scanf("%d",&row);
   for(i=1;i<=row;i++){
     for(j=1;j<=row-i;j++){
            printf(" ");
     }
     for(j=1;j<=i-1;j++){
            printf("%d ",j);
     }
     printf("1\n");
   }
   return EXIT_SUCCESS;
}
```

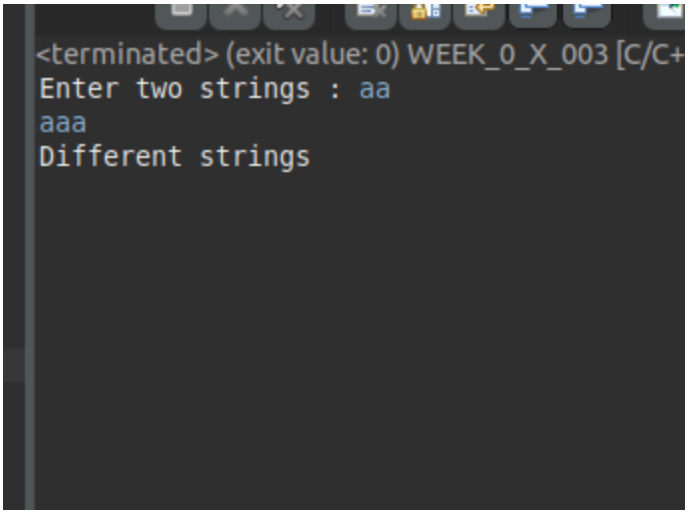


3. Write a program to compare two strings without using string functions.

```
//compare two strings without using string functions.
#include <stdio.h>
#include <stdlib.h>
int main(void) {
   int i,flag=0;
   char str1[25],str2[25];
   printf("Enter two strings : ");
   scanf("%s%s",str1,str2);
   for(i=0;i<25;i++){
     if(str1[i]=='\0'&&str2[i]=='\0'){
              break;
     }else if(str1[i]!=str2[i]){
              flag=1;
              break;
     }
   }
   if(flag==0){
     printf("same strings");
   }else{
     printf("Different strings");
   }
```

return EXIT_SUCCESS;

}



4. Write a menu driven program to perform following Operations without using Library functions.
    1. STRING LENGTH
    2. STRING CONCATENATION
    3. STRING REVERSE

A. The program should not end until the user exits the program by giving an input to the program to exit. The menu Should contain an option to exit.

B. The program should Contain 4 Functions Excluding main():

a. STRINGLENGTH()
b. STRINGCONCATENATION()
c. STRINGREVERSE()
d. EXIT()

//STRING FUNCTIONS

#include <stdio.h>

#include <stdlib.h>

void STRINGLENGTH();

void STRINGCONCATENATION();

void STRINGREVERSE();

void EXIT();

int main(void) {

```
    int choice;
    do{
      printf("1. String Length\n2. String Concatenation\n3. String Reverse\n4. Exit\n");
      printf("Enter Your Choice : ");
      scanf("%d",&choice);
      switch(choice){
      case 1 : STRINGLENGTH();break;
      case 2 : STRINGCONCATENATION();break;
      case 3 : STRINGREVERSE();break;
      case 4 : EXIT();break;
      default : printf("Enter a Valid Input !\n");
      }
    }while(choice!=4);
    return EXIT_SUCCESS;
}
void STRINGLENGTH(){
    int length=0;
    char str[20];
    printf("Enter a String : ");
    scanf("%s",str);
    while(str[length]!='\0'){
      length++;
    }
    printf("length : %d\n",length);
}
void STRINGCONCATENATION(){

    char str1[20],str2[20],str3[30];
    int i=0, length=0;
    printf("Enter String 1 : ");
    scanf("%s",str1);
    printf("Enter a String 2 : ");
```

```
    scanf("%s",str2);
    while(str1[i]!='\0'){
      str3[i]=str1[i];
      i++;
    }
    length=i;
    i=0;
    while(str2[i]!='\0'){
      str3[length]=str2[i];
      length++;
      i++;
    }
    str3[length]='\0';
    printf("String After Concatenation : %s\n",str3);
}
void STRINGREVERSE(){
    char str[20],strRev[20];
    int i=0,length=0;
    printf("Enter a String : ");
    scanf("%s",str);
    while(str[length]!='\0'){
      length++;
    }
    while(str[i]!='\0'){
      strRev[length-i-1]=str[i];
      i++;
    }
    //strRev[i]='\0';
    printf("Reverse String : %s\n",strRev);
    //printf("%c",strRev[length]);
}
void EXIT(){
```

```
    printf("Exit");
    exit(0);
}
```

```
<terminated> (exit value: 0) WEEK_0.1_X_004 [C/C++ Ap
1. String Length
2. String Concatenation
3. String Reverse
4. Exit
Enter Your Choice : 2
Enter String 1 : abc
Enter a String 2 : def
String After Concatenation : abcdef
1. String Length
2. String Concatenation
3. String Reverse
4. Exit
Enter Your Choice : 4
Exit
```

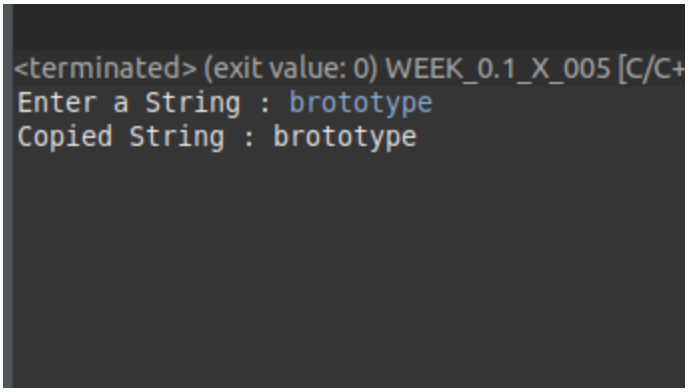
5. Write a Program to copy one string to another without using String Functions?

```
//STRING COPY WITHOUT STRING FUNCTIONS

#include <stdio.h>
#include <stdlib.h>

int main(void) {
    char str[20],strCopy[20];
    int length=0;
    printf("Enter a String : ");
    scanf("%s",str);
    while(str[length]!='\0'){
      strCopy[length]=str[length];
      length++;
    }
    strCopy[length]='\0';
```

```
    printf("Copied String : %s",strCopy);
    return EXIT_SUCCESS;
}
```



6. Read some Malayalam Movie Names from User And Sort it?

Code of the program & screenshot of the output.

7. Write a program to read the string “India is my country” from the user and find the position of the word “is”?

Code of the program & screenshot of the output.

8. Read random numbers [22,87,178,34,10,45,22,89,31] from user and sort numbers in descending Order?

```
//Descending Sort
#include <stdio.h>
#include <stdlib.h>
int main(void) {
    int num[10],i,j,temp,size;
    printf("Enter Array Size : ");
    scanf("%d",&size);
    printf("Enter Array Elements : ");
    for(i=0;i<size;i++){
        scanf("%d",&num[i]);
    }
    for(i=0;i<size-1;i++){
        for(j=i+1;j<size;j++){
```

```
            if(num[i]<num[j]){
                temp=num[i];
                num[i]=num[j];
                num[j]=temp;
            }
        }
    }
    printf("Sorting in Descending : ");
    for(i=0;i<size;i++){
        printf("%d\t",num[i]);
    }
    return EXIT_SUCCESS;
}
```

```
<terminated> (exit value: 0) WEEK_0.1_X_8_Descend_Sort [C/C++ Application] /home/muhammad_fa
Enter Array Size : 8
Enter Array Elements : 1
5
2
4
23
45
1445
344
Sorting in Descending : 1445    344     45      23      5       4       2       1
```

9. Read a character from the user and find the ASCII code of that character?

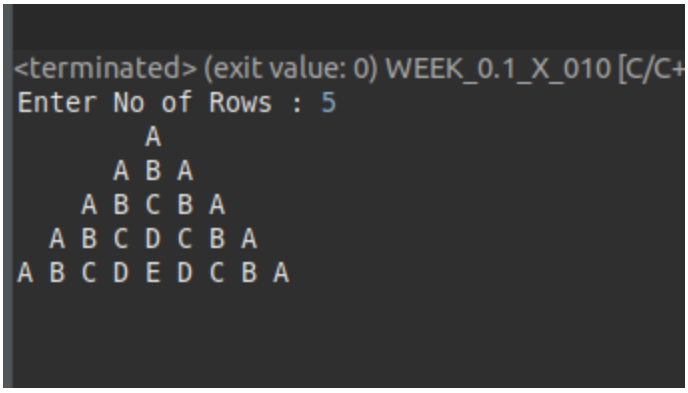
Code of the program & screenshot of the output.

10. Write a program to print the following pattern

```
        A
      A B A
    A B C B A
  A B C D C B A
```

```
//Alphabet Pyramid
#include <stdio.h>
```

```
#include <stdlib.h>
int main(void) {
   int limit,i,j,k;
   printf("Enter No of Rows : ");
   scanf("%d",&limit);
   for(i=1;i<=limit;i++){
         for(j=1;j<=limit-i;j++){
               printf("  ");
         }
         for(j=0;j<i;j++){
               printf("%c ",65+j);
         }
         for(k=2;k<=i;k++){
               printf("%c ",65+j-k);
         }
         printf("\n");
   }
   return EXIT_SUCCESS;
}
```



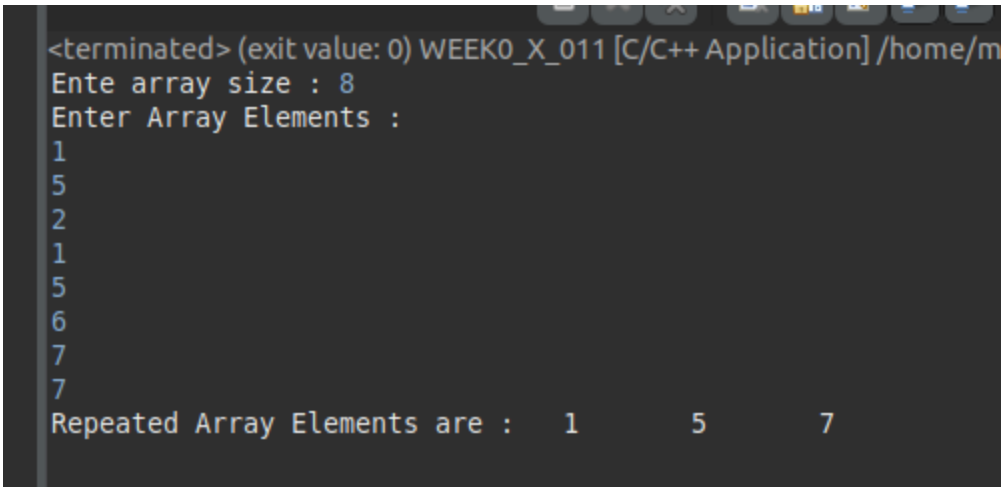
11. Read some numbers from the user and find the repeating numbers?

Eg:

Input : 2 9 4 6 9 4

Output : 9 4

```
//Find repeating elements in an array
#include <stdio.h>
#include <stdlib.h>
int main(void) {
   int limit,arr[10],i,j,flag=0;
   printf("Ente array size : ");
   scanf("%d",&limit);
   printf("Enter Array Elements : \n");
   for(i=0;i<limit;i++){
      scanf("%d",&arr[i]);
   }
   printf("Repeated Array Elements are :   ");
   for(i=0;i<limit-1;i++){
      flag=0;
      for(j=0;j<limit;j++){
            if(i==j){
                  continue;
            }
            if(arr[i]==arr[j]){
                  if(i<j){
                        flag=1;break;
                  }else{
                        break;
                  }
            }
      }
      if(flag==1){
            printf("%d\t",arr[i]);
      }
   }
    return EXIT_SUCCESS;
}
```



12. Read a line of text from the user , Find the number of Alphabets, Digits and Special characters?

Eg,

Input : hello, Welcome to District B-13

Output :-

Number of Alphabets in the string is : 23

Number of Digits in the string is : 2

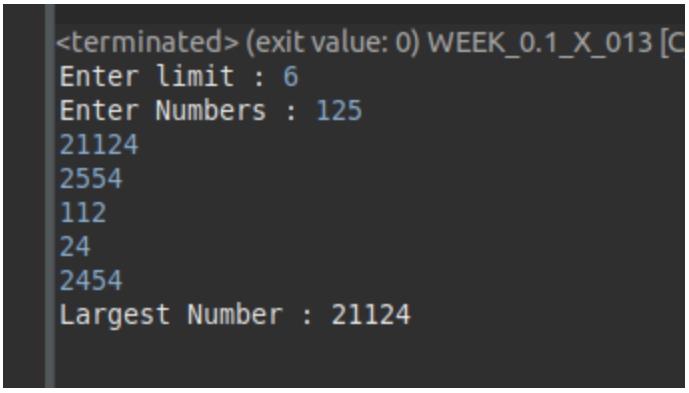
Number of Special characters in the string is : 7

Code of the program & screenshot of the output.

13. Read random numbers from the user, find the maximum number in the list of numbers?
    a. Use at least one function
    b. The function should return a value to main function

```
//Largest in an array using function
#include <stdio.h>
#include <stdlib.h>
int largest(int arr[],int size){
   int big=arr[0],i;
   for(i=1;i<size;i++){
      if(big<arr[i]){
            big=arr[i];
      }
```

```
    }
    return big;
}
int main(void) {
    int limit,num[20],i,larg;
    printf("Enter limit : ");
    scanf("%d",&limit);
    printf("Enter Numbers : ");
    for(i=0;i<limit;i++){
      scanf("%d",&num[i]);
    }
    larg=largest(num,limit);
    printf("Largest Number : %d",larg);
    return EXIT_SUCCESS;
}
```



14. Read a random number (n) from the user and Generate n^{th} Fibonacci
    a. Must use Recursion

Code of the program & screenshot of the output.

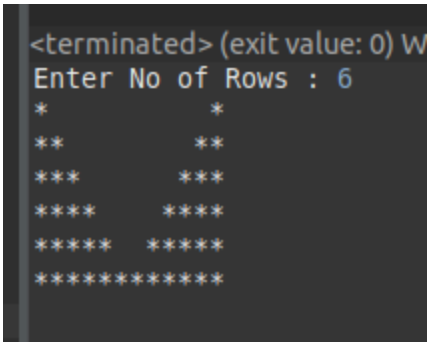
15. Write a program to print following pattern

```
*          *
* *        * *
* * *      * * *
```

```
            * * * *                 * * * *
            * * * * *               * * * * *
            * * * * * *             * * * * * *
            * * * * * * *           * * * * * * *
            * * * * * * * *         * * * * * * * *
            * * * * * * * * *       * * * * * * * * *
            * * * * * * * * * * * * * * * * * * * * *
```

```
//STAR
#include <stdio.h>
#include <stdlib.h>

int main(void) {
   int row,i,j,space;
   printf("Enter No of Rows : ");
   scanf("%d",&row);
   for(i=1;i<=row;i++){
     for(j=1;j<=i;j++){
            printf("*");
     }
     for(space=1;space<=((row-i)*2);space++){
            printf(" ");
     }
     for(j=1;j<=i;j++){
            printf("*");
     }
     printf("\n");
   }
   return EXIT_SUCCESS;
}
```



16. It's your first day at school. Your teacher asked the students to meet every other student in the class and to introduce themselves. The teacher asked them to do handshakes when they meet each other.

If there are n number of students in the class then find the total number of handshakes made by the students.

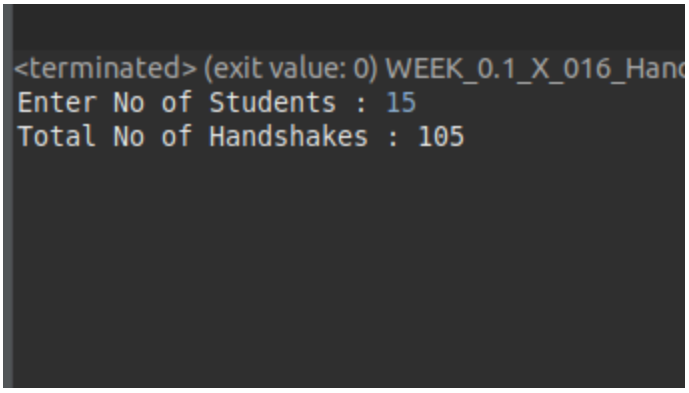
Program to find the maximum number of handshakes is discussed here. Given a positive integer n, find out the total number of handshakes possible.

Eg,

Input : 15 // Total Number of students

Output :105 //Maximum Number of Handshakes

```
//No Of Handshakes
#include <stdio.h>
#include <stdlib.h>
int main(void) {
   int students,handshakes;
   printf("Enter No of Students : ");
   scanf("%d",&students);
   handshakes=students*(students-1)/2;
   printf("Total No of Handshakes : %d",handshakes);
   return EXIT_SUCCESS;
}
```



17. Read two numbers from the user and swap those two numbers using Pointer.

Code of the program & screenshot of the output.

18. Convert the lowercase characters in a word into uppercase

Eg,

Input : Hello

Output : HELLO

Code of the program & screenshot of the output.

19. Write a program to calculate the charge for parcel:

If the weight of the parcel is less than 500gm or equal to 500gm then the parcel charge will be Rs. 200, Otherwise there is an additional charge of Rs.170 per each extra 500gm

Code of the program & screenshot of the output.

20. Write a program to perform the following calculation:

a. Matrix addition
b. Matrix multiplication
c. Matrix subtraction
d. Matrix transpose

- Program should be a menu driven program.
- Program should have Functions with arguments and Return Value.
    - List Functions:
        - matrix_addition()
        - matrix_multiplication()
        - matrix_subtraction()
        - matrix_transpose()
        - exit()
- Do not exit the program until the user enters the input to exit the program.

Code of the program & screenshot of the output.