C program

Q1)Write a program to calculate average marks of "n" number of student using pointers and array
Ans :-

```
        #include <stdio.h>
    int main() {
    int n, i;
    float sum = 0.0, average;

    printf("Enter the number of students: ");
    scanf("%d", &n);

    int marks[n];
       printf("Enter marks of %d students:\n", n);
       for (i = 0; i < n; i++) {
       printf("Enter marks of student %d: ", i + 1);
       scanf("%d", &marks[i]);
       sum += marks[i];
    }
       average = sum / n;
       printf("Average marks of %d students = %.2f\n", n, average);

    return 0;
}
```

**Q2)write a program to accept a matrix of size 3*3 and print the same using pointer **
 Ans :-

```
        #include <stdio.h>
  int main() {
   int matrix[3][3];
   int *ptr = &matrix[0][0];
   int i, j;
 printf("Enter elements of the matrix (3x3):\n");
   for (i = 0; i < 3; i++) {
      for (j = 0; j < 3; j++) {
         scanf("%d", ptr + i * 3 + j);
      }
   }
   printf("The matrix is:\n");
   for (i = 0; i < 3; i++) {
      for (j = 0; j < 3; j++) {
         printf("%d ", *(ptr + i * 3 + j));
      }
```

```c
    printf("\n");
  }

  return 0;
}
```

Q3) write a program to multiply two numbers using function pointer
Ans :-

```c
        #include<stdio.h>
    int mul(int,int);
    void main() {
    int x=5,y=6,m;
    int(*ptr)(int,int);
      ptr=&mul; m=(*ptr)(x,y);
        printf("%d\n",m);
}
      int mul(int a,int b) {
return a*b;
 }
```

Q4) Write a program to find sum of n elements entered by user. To perform this, allocate memory dynamically using malloc() function

```c
 #include<stdio.h>
 void main() {
 int *a,num,i,sum;
printf("Enter Number Of Values\n");
scanf("%d",&num);
printf("Enter %d values\n",num);
for(i=0;i<num;i++) {
a=(int*)malloc(sizeof(int));
 scanf("%d",a);
sum=sum+*a;
 }
 printf("\nsum=%d\n",sum);
 }
```

Q5) Write a program to find largest among "n" numbers using dynamic memory allocation.

```c
#include<stdio.h>
void main() {
 int *a,n,i,max=0;
 printf("Enter Number Of Values\n");
scanf("%d",&n);
printf("Enter %d Values\n",n);
 for(i=0;i<n;i++) {
 a=(int*)malloc(sizeof(int));
scanf("%d",a);
 if(max<*a) max=*a;
 }
printf("\nMax=%d\n",max);
 }
```

Q6) Write a program to find the number of vowels, consonants, digits and white space in a string.

```c
#include<stdio.h>
void main() {
 char a[50];
 int i,vowel=0,cons=0,spaces=0,digits=0;
  printf("Enter String\n");
  gets(a); for(i=0;a[i]!='\0';i++) {
  if(a[i]=='a'|| a[i]=='e'|| a[i]=='i'|| a[i]=='o'|| a[i]=='u' || a[i]=='A'|| a[i]=='E'|| a[i]=='I'|| a[i]=='O' ||
a[i]=='U') vowel++; else if(a[i]>='a' && a[i]<='z' || a[i]>='A' && a[i]<='Z')
 Cons++;
 else if(a[i]>='0' && a[i]<='9') digits++;
 else if(a[i]==' ')
spaces++;
 }
printf("\nvowels is %d",vowel); printf("\nconsonant is %d",cons); printf("\nspaces is %d",spaces);
printf("\ndigits is %d",digits);
```

}

Q.7) Write a program which accepts a sentence from the user and replaces all lower case letters by uppercase letters.

```c
   #include<stdio.h>
   void main() {
  char a[50];
   int i; printf("Enter String\n");
   gets(a); for(i=0;a[i]!='\0';i++)
 {
  if(a[i]>='a' && a[i]<='z') { a[i]=a[i]-32;
  }
  printf("String in Upper Case=%s\n",a);
  }
```

Q.8) Write a program to print Contents of 2-D character array(using pointer to array of string)Refer to above example.

```c
#include<stdio.h>
void main()
{
char str[5][20];
int i;
printf("Enter 5 string: ");
for(i=0;i<5;i++)
scanf("%s",str[i]);
for(i=0;i<5;i++)
printf("%s",str[i]);
}
```

Q10)Write a program to Count number of words in a given sentence.

```c
#include<stdio.h>
void main()
{
char s[200];
int count = 0,i;
```

```c
printf("Enter string\n");
scanf("%s",s);
for(i=0;s[i]!='\0';i++)
{
if(s[i] == ' ')
count++;
}
printf("Number of words in given string are: %d\n",count + 1);
}
```

Q11) Write a program to display the arguments passed using command line argument(refer to above example).

```c
#include <stdio.h>
int main(int argc, char *argv[])
{
printf("Program Name : %s\n", argv[0]);
printf("Number of arguments: %d\n", argc);
printf("Arguments Supplied :\n");
for (int i = 0; i < argc; i++)
{
printf("%s\n", argv[i]);
}
}
```

Q12) Write a program to add two numbers using Command Line Arguments.

```c
#include <stdio.h>
#include <stdlib.h>
int main(int argc, char *argv[])
{
int a,b,sum;
if(argc!=3)
{
printf("please use \prg name value1 value2\");
return 0;
}
a=atoi(argv[1]);
```

```c
b=atoi(argv[2]);
sum=a+b;
printf("Sum is %d",sum);
return 0;
}
```

Q13)Write a program to store and access "id, name and percentage" for 3 students.(array of structures)

```c
#include <stdio.h>
#include <string.h>
struct Student {
int id;
char name[50];
float percentage;
};
int main() {
struct Student students[3];
int i;
for (i = 0; i < 3; i++) {
printf("Enter information for student %d:\n", i+1);
printf("ID: ");
scanf("%d", &students[i].id);
printf("Name: ");
scanf("%s", students[i].name);
printf("Percentage: ");
scanf("%f", &students[i].percentage);
}
printf("\nInformation for all students:\n");
for (i = 0; i < 3; i++) {
printf("Student %d:\n", i+1);
printf("ID: %d\n", students[i].id);
printf("Name: %s\n", students[i].name);
printf("Percentage: %.2f\n", students[i].percentage);
} return 0;
}
```