INTRODUCTION TO PROGRAMMİNG PROJECT

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Project 1

Main Section

In this section i take the values from user.For iterative function, first i check with if and made the loop of the small value from the user here.

```
int main()
{
 int a=0,b=0,k;
 printf("Enter your values for sum(a,b) :");
 scanf("%d%d",&a,&b);
 printf("Recursive: %d",recursive(a,b));
 k=b;
 if(a<b){
    for(int i=1;i<=a;i++){
        b=iterative(b);
    }
    printf("\nIterative: %d",b);
 }
 if(b<a){
    k=a;
    for(int i=1;i<=b;i++)
        a=iterative(a);
    printf("\nIterative: %d",a);
 }
 return 0;
}               //5     3
```

Recursive Function

I check the values which one is small and start first for loop with small value.In the first loop, I set the sum variable to zero.In the other i did addition after in first loop I equated the sum to the big number.So the loop will start the total.Two if is doing same thing.

```
}                   //5      3
int recursive(int a,int b){
     int i,sum=0;
    if(b<a){
     for(int j=1;j<=b;j++)
     {
      sum=0;
      for(i=1; i<=a; i++)
          {
            sum=sum+i;
          }
          a=sum;
          }
          return a;
     }
if(a<b){
     for(int j=1;j<=a;j++){
          sum=0;
          for(int i=0;i<=b;i++){
               sum+=i;
```

Iterative Function

I check values in main section i made a comparison, which is small.In iterative function if big value equated to 1 return 1 or itself plus iterative fucntion.In this section loop starts with value minus 1.

```
int iterative(int a){
     if(a==1)
        return 1;
     return a+iterative(a-1);

}
```

Project 2

Main Section

I've identified three arrays. Str array is keeping the letters in the string entered by the user. Ch_fre keeps the number of letters in the strings.Used array keeps in the alphabet.I also used the fgets function. This function returns the strings entered from the keyboard and throws it into the str array.

```
void main()
{
     char str[str_size];
     int ch_fre[chr_no];
     int used[26]={0},total=0;
     int i = 0, max;
     int ascii;

        printf("Input the string : ");
        fgets(str, sizeof str, stdin);
     for(i=0;str[i]!='\0';i++){
          if('a'<=str[i]&&str[i]<='z'){
               total+=!used[str[i]-'a'];
               used[str[i]-'a']=1;
          }
          else if('A'<=str[i]&&str[i]<='Z'){
               total+=!used[str[i]-'A'];
               used[str[i]-'A']=1;
          }
     }
     for(i=0; i<chr_no; i++)
```

In first loop i check whether the Str array is empty or not.After With if fisrt lower case state i check which letter is used after i increasing the value of the used array.I make same thing for upper case.I set the chr_fre array to zero.So i can sure,result is right.In while loop, first i read frequency of each characters.In for loop i find which letters most occured in string.And last i look, all alphabeth letter used in string.

```
    }
    for(i=0; i<chr_no; i++)
    {
        ch_fre[i] = 0;
    }
    i=0;
    while(str[i] != '\0')
    {
        ascii = str[i];
        ch_fre[ascii] += 1;
        i++;
    }
    max = 0;
    for(i=0; i<chr_no; i++)
    {
        if(i!=32)
        {
        if(ch_fre[i] > ch_fre[max])
            max = i;
        }
    }
    if(total==26)
        printf("\nFully sentence");
    else
        printf("\nNot fully sentence");
    printf("\nThe Highest frequency of character '%c' app
}
```

Project 3

Main Section

First, I asked the user what action he wanted to take and I directed him with switch-case.

In first case I took the dimensions of the array from the user for the transpose process and filled the array with random numbers with the rand function.Then i got the transpose of the array with the tran_arr function. In second case i check dimensions equal if equal i did the same process as the first one. in third case i checked column of first the array equal with row of the second array.And i did the same process as the first one.

```
{
    int ml[10][10],m2[10][10],row,col,choice,row
    int ort=1;
    char again='Y';
    char againl='y';

    printf("please select.\n");
    srand((unsigned)time(NULL));

    while(again=='Y'||againl=='y'){

    printf("1)Transpose\n2)Addition\n3)Multiplic
    scanf("%d",&choice);
    switch(choice)
    {
    case 1:
    {

    printf("Enter number value of rows and colum
    scanf("%d%d",&row,&col);
    printf(" Element of first matrix\n");
    mRand(ml,row,col);
    printf(" Transpose\n");
    tran_arr(ml,row,col);
    break;
```

Tran_arr Function

In the function i read the array, rows is become colums and columns is become rows and printing on the screen.

```
void tran_arr(int ml[10][10],int rows,int col)
{
        int  i,j;
        for(i=0; i<rows; i++)
            for(j=0; j<col;j++)
            {
                printf("%d",ml[j][i]);
            }
}
```

Mul_arr Function

I set the array to zero.I multiplying arrays and store result array.

```
void mul_arr(int m1[10][10],int m2[10][10],int row,int col,int c
{
    int i,j,k;
    int mulM[10][10];
    for(i=0;i<row;++i)
    {
        mulM[i][j]=0;
    }

     for(i=0;i<=row;i++)
            for(j=0;j<=col;j++)
                for (k=0;k<=row;k++)
                {
                    mulM[i][j] += m1[i][k]* m2[k][j];
                }
    for(i=0;i<row;++i)
        for(j=0;j<coll;++j)
        {
            printf("\t%d",mulM[i][j]);
```

MRand Function

In this function i fill the array random numbers.

```
void mRand(int a[10][10],int rows,int columns)
{
    int i,j,random;
        for(i=0;i<rows;i++)
            {
            for(j=0;j<columns;j++)
            {
              random=rand()%36+1;

              a[i][j]=random;
              printf("%i ",a[i][j]);
            }
            printf("\n");
        }
```

Add_Function

In this function first i multipling the second array with common number and i add two arrays.

```
void add_arr(int ml[10][10],int m2[10][10],int ort,int row,int c
{
    int i,j,sum[10][10],suml[10][10];
    for(i=1;i<=row;i++){
            for(j=1;j<=col;j++)
            {
                suml[i][j] = ort* m2[i][j];
            }
    }
    for (i=0;i<row;i++){
        for(j=0;j<col;j++){
            sum[i][j]=ml[i][j]+suml[i][j];
            printf("\t%d",sum[i][j]);
        }
        printf("\n");
```