ASSIGNMENT-1

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Branch-ELECTRICAL
SUBJECT-APPLICATION FOR EE PROGRAMMING
SUBJECT CODE-EET273

AIM-SOLVING ELECTRICAL PROBLEM USING C PROGRAM

METHOD-FUNCTION POINTER

DESCRIPTION-WITH THIS PROGRAM THE CONDITION OF ELECTRICAL BRIDGES CAN BE CHECKED AND VALUE OF QUALITY FACTOR IS CALCULATED WHICH INCLUDES MAXWELL BRIDGE,MAXWELL – INDUCTANCE BRIDGE, HAYS BRIDGE,OWEN BRIDGE.

PROGRAM EXPLANATION-1).IN THIS FIRST I CREATED THE FUNCTION FOR EACH REQUIRED BRIDGE IN WHICH THE VARIABLE REQUIRED ARE DECLARED AND THE CONDITION AND QUALITY FACTOR FOR EACH BRIDGE IS WRITTEN

2).THEN All THE VARIABLES IS PASSED IN FUNCTION POINTER.IN FUNCTION POINTER FUNCTION'S NAME CAN BE USED TO GET FUNCTION ADDRESS .ALSO IT CAN PASS THE FUNCTION AS AN ARGUMENT AND CAN BE RETURNED FROM A FUNCTION.THUS WITH THE HELP OF THIS THE BRIDGE FUNCTIONS ARE PASSED AS ARGUMENT ALSO.

3).HERE WITH THE HELP OF CODE AND OUTPUT SNAP I WILL PRESENT THE OUTPUT FOR BALANCED AS WELL AS UNBALANCED.

CODE-

```
#include <stdio.h>

void maxwell(int r2,int r3,int r4,int l3,int w)
{   int r1,l1,c,d,qf;
    printf("Enter value for R1 AND L1=\n");
    scanf("%d%d",&r1,&l1);
    c=(r2*r3)/r4;
    d=(r2*l3)/r4;
    if(c==r1&&d==l1)
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```
    {
        printf("\nBridge is balanced\n");
        qf=(w*l3)/r3;
        printf("Quality factor= %d\n",qf);
    }
    else
    {
       printf("\nBridge is not balanced\n");
    }
}
void maxwellinduc(int r2, int r3,int r4,int c4,int w)
{
     int r1,l1,c,d,qf;
    printf("Enter value for R1 AND L1=\n");
    scanf("%d%d",&r1,&l1);
    c=(r2*r3)/r4;
    d=c4*r2*r3;
    if(c==r1&&d==l1)
    {
        printf("\nBridge is balanced\n");
        qf=w*c4*r4;
        printf("Quality factor= %d\n",qf);
    }
    else
    {
       printf("\nBridge is not balanced\n");
    }
}
void hays(int r2,int r3,int r4,int c4,int w)
{
  int r1,l1,c,d,qf;
    printf("Enter value for R1 AND L1=\n");
    scanf("%d%d",&r1,&l1);
    c=(r2*r3*r4*(c4*c4)*(w*w))/(1+(w*w)*(c4*c4)*(r4*r4));
    d=(r2*r3*c4)/(1+(w*w)*(c4*c4)*(r4*r4));
    if(c==r1||d==l1)
    {
        printf("\nBridge is balanced\n");
        qf=1/(w*c4*r4);
        printf("Quality factor= %d\n",qf);
    }
    else
    {
       printf("\nBridge is not balanced\n");
    }
}
void owen(int r2, int r3,int c4,int c2,int w)
{
    int r1,l1,c,d,qf;
    printf("Enter value for R1 AND L1=");
```

```
    scanf("%d%d",&r1,&l1);
    c=(r2*c4)/c2;
    d=r2*r3*c4;
    if(c==r1&&d==l1)
    {
        printf("\nBridge is balanced\n");
        qf=w*r2*c2;
        printf("Quality factor= %d\n",qf);
    }
    else
    {
       printf("\nBridge is not balanced\n");
    }
}

int main()
{
    // fun_ptr_arr is an array of function pointers
    void (*fun_ptr_arr[])(int,int,int,int,int) = {maxwell,maxwellinduc,hays,owen};
    unsigned int ch;
    int r1,r2,r3,r4,l1,l2,l3,c1,c2,c3,c4,w;

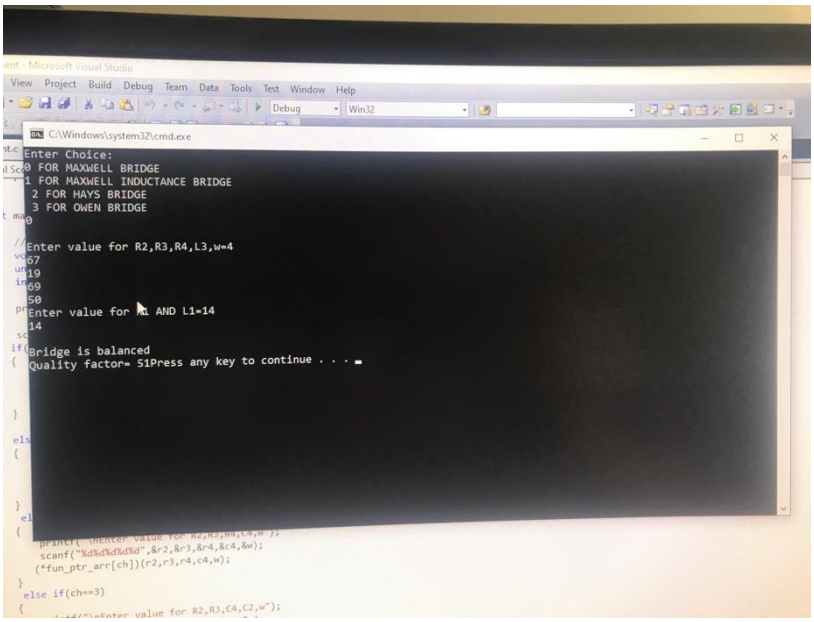
    printf("Enter Choice: \n0 FOR MAXWELL BRIDGE\n1 FOR MAXWELL
INDUCTANCE BRIDGE\n 2 FOR HAYS BRIDGE"
           "\n 3 FOR OWEN BRIDGE\n");
    scanf("%d", &ch);
   if(ch==0)
   {
       printf("\nEnter value for R2,R3,R4,L3,w=\n");
       scanf("%d%d%d%d%d",&r2,&r3,&r4,&l3,&w);
      (*fun_ptr_arr[ch])(r2,r3,r4,l3,w);
   }

   else if(ch==1)
   {
       printf("\nEnter value for R2,R3,R4,C4,w=\n");
       scanf("%d%d%d%d%d",&r2,&r3,&r4,&c4,&w);
      (*fun_ptr_arr[ch])(r2,r3,r4,c4,w);
   }
    else if(ch==2)
   {
       printf("\nEnter value for R2,R3,R4,C4,w=\n");
       scanf("%d%d%d%d%d",&r2,&r3,&r4,&c4,&w);
      (*fun_ptr_arr[ch])(r2,r3,r4,c4,w);
   }
    else if(ch==3)
   {
       printf("\nEnter value for R2,R3,C4,C2,w=\n");
       scanf("%d%d%d%d%d",&r2,&r3,&c4,&c2,&w);
      (*fun_ptr_arr[ch])(r2,r3,c4,c2,w);
```

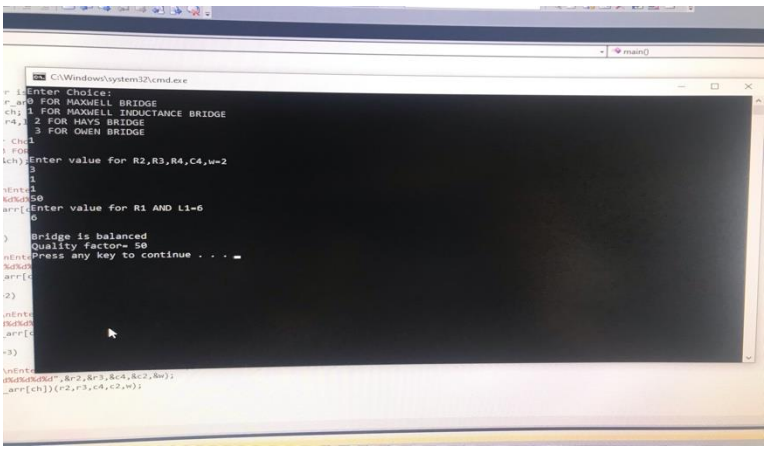
```
    }
     else
     return 0;
}
```

OUTPUT-

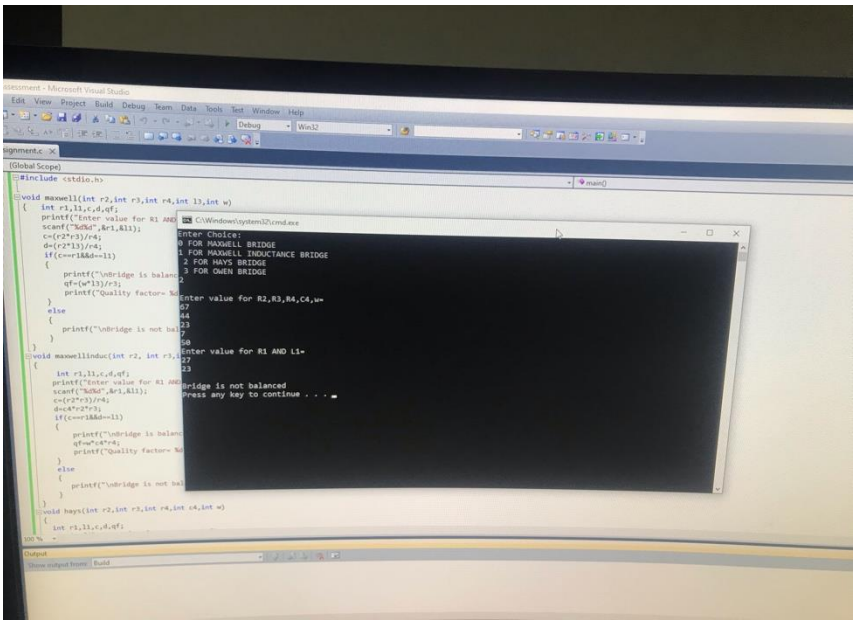
1).MAXWELL BRIDGE (BALANCED)-



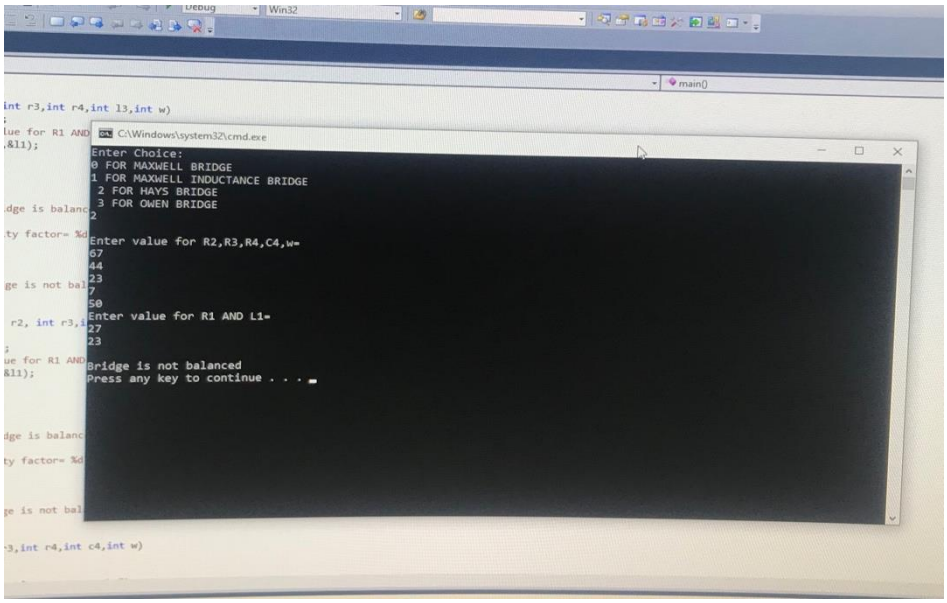
2).MAXWELL INDUCTANCE BRIDGE (BALANCED)-



3).HAYS BRIDGE (UNBALANCED CONDITION)



4).OWEN BRIDGE (BALANCED)



HENCE HERE ALL THE CONDITION AND QUALITY FACTOR IS CHECKED AND CALCULATED RESPECTIVELY BY USING THIS C PROGRAM