```c
#include<stdio.h>
#include<math.h>

int main()
{
float i,th,I,n,E=12,l,b,d,W,M,Mmax,S,D;
int beam,load;
    printf("This program is to find the maximum bending moment, slope a
    printf("Select the type of Beam:\n");
    printf("1.Cantilever beam\n2.Simply Supported Beam\n");
    scanf("%d",&beam);
    printf("Select the type of load acting on the beam:\n");
    printf("1.Bending Moment\n2.Point Load\n3.Uniformly distributed loa
    scanf("%d",&load);
if(beam==1&&load==1)
{
    printf("Cantilever beam with bending moment\n");
    printf("enter the length of the beam(m): ");
    scanf("%f",&l);
    printf("enter the breadth of the beam(m): ");
    scanf("%f",&b);
    printf("enter the width of the beam(m): ");
    scanf("%f",&d);
    I=b*(pow(d,3))/12;
    printf("Moment of inertia= %f\n",I);
    printf("Enter bending moment acting on the beam: ");
    scanf("%f",&M);
    th=(M*l)/(E*I);
    D=th*(l/2);
    printf("The maximum bending moment= %fNm\n",M);
    printf("Slope= %f\n",th);
    printf("Maximum deflection= %fm\n",D);
    printf("Variation of deflection along different lengths of the beam
    for(i=0;i<=l;i=i+(l/10))
    {
        S=i*th;
        printf("\n");
        printf("\nDeflection at the distance %fm =%fm",i,S);
    }
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}
else if(beam==1&&load==2)
{
    printf("Cantilever beam with point load at one end\n");
    printf("enter the length of the beam(m): ");
    scanf("%f",&l);
    printf("enter the breadth of the beam (m): ");
    scanf("%f",&b);
    printf("enter the width of the beam (m): ");
    scanf("%f",&d);
    I=b*(pow(d,3))/12;
    printf("Moment of inertia= %f\n",I);
    printf("Enter the point load acting on the beam: ");
    scanf("%f",&W);
    M=W*l;
    th=(M*l)/(2*E*I);
    D=th*((2*l)/3);
    printf("The maximum bending moment= %fNm\n",M);
    printf("Slope= %f\n",th);
    printf("Maximum deflection=  %fm\n",D);
    printf("Variation of deflection along different lengths of the beam
    for(i=0;i<=l;i=i+(l/10))
    {
        S=i*th;
        printf("\n");
        printf("\nDeflection at the distance %fm =%fm",i,S);
    }
}
else if(beam==1&&load==3)
{
    printf("Cantilever beam with uniformly distributed load\n");
    printf("enter the length of the beam(m): ");
    scanf("%f",&l);
    printf("enter the breadth of the beam (m): ");
    scanf("%f",&b);
    printf("enter the width of the beam (m): ");
    scanf("%f",&d);
    I=b*(pow(d,3))/12;
    printf("Moment of inertia= %f\n",I);
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    printf("Enter the load acting on the beam: ");
    scanf("%f",&W);
    M=(W*l*l)/2;
    th=(M*l)/(3*E*I);
    D=th*((3*l)/4);
    printf("The maximum bending moment= %fNm\n",M);
    printf("Slope= %f\n",th);
    printf("Maximum deflection=  %fm\n",D);
    printf("Variation of deflection along different lengths of the beam
    for(i=0;i<=l;i=i+(l/10))
    {
        S=i*th;
        printf("\n");
        printf("\nDeflection at the distance %fm =%fm",i,S);
    }
}
else if(beam==2&&load==2)
{
    printf("Simply Supported beam with point load at centre\n");
    printf("enter the length of the beam(m): ");
    scanf("%f",&l);
    printf("enter the breadth of the beam (m): ");
    scanf("%f",&b);
    printf("enter the width of the beam (m): ");
    scanf("%f",&d);
    I=b*(pow(d,3))/12;
    printf("Moment of inertia= %f\n",I);
    printf("Enter the point load acting on the beam: ");
    scanf("%f",&W);
    M=(W*l)/4;
    th=(M*l)/(4*E*I);
    D=th*(l/3);
    printf("The maximum bending moment= %fNm\n",M);
    printf("Slope= %f\n",th);
    printf("Maximum deflection=  %fm\n",D);
    printf("Variation of deflection along different lengths of the beam
    for(i=0;i<=l;i=i+(l/10))
    {
        S=i*th;
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        printf("\n");
        printf("\nDeflection at the distance %fm =%fm",i,S);
    }
}
else if(beam==2&&load==3)
{
    printf("Simly Supported beam with uniformly distributed load\n");
    printf("enter the length of the beam(m): ");
    scanf("%f",&l);
    printf("enter the breadth of the beam (m): ");
    scanf("%f",&b);
    printf("enter the width of the beam (m): ");
    scanf("%f",&d);
    I=b*(pow(d,3))/12;
    printf("Moment of inertia= %f\n",I);
    printf("Enter the load acting on the beam: ");
    scanf("%f",&W);
    M=(W*l*l)/8;
    th=(M*l)/(3*E*I);
    D=th*(5*l/16);
    printf("The maximum bending moment= %fNm\n",M);
    printf("Slope= %f\n",th);
    printf("Maximum deflection=  %fm\n",D);
     printf("Variation of deflection along different lengths of the bea
    for(i=0;i<=l;i=i+(l/10))
    {
        S=i*th;
        printf("\n");
        printf("\nDeflection at the distance %fm =%fm",i,S);
    }
}
else if(beam==2&&load==1)
{
    printf("Such a case is not possible");
}
else
{
    printf("WRONG INPUT ENTERED");
}
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    return 0;
}
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