```c
#include<stdio.h>
#include<math.h>
void Add();
void Subtract();
void Division();
void Multiplication();
void Remainder();
void Square_root();
void Power();
void Sin();
void Cos();
void Tan();
void Cube_root();
void Log();
void Inverse_sin();
void Inverse_cos();
void Inverse_tan();
void Factorial();


int main()
{
    int choice;
    int c;

    printf("                                          Mini Calculator\n");
    printf("                                        ----------------------\n\n");

    printf("                     1. Addition\t5. Remainder\t9. Cosine\t13. Inverse Sine\n");
    printf("                     2. Subtraction\t6. Square Root\t10. Tangent\t14. Inverse Cosine\n");
    printf("                     3. Division\t7. Power\t11. Cube Root\t15. Inverse Tangent\n");
    printf("                     4. Multiplication\t8. Sine\t\t12. Logarithm\t16. Factorial\n");
    printf("                   ------------------------------------------------------------------------\n"
);

    printf("                        Choose your desired operation by pressing number \"1 to 16\": ");
    scanf("%d", &choice);
    printf("                       ------------------------------------------------------------\n");

    switch(choice)
    {
    case 1:
        Add();
        break;
    case 2:
        Subtract();
        break;
    case 3:
        Division();
        break;
    case 4:
        Multiplication();
        break;
    case 5:
        Remainder();
        break;
    case 6:
        Square_root();
        break;
    case 7:
        Power();
        break;
    case 8:
        Sin();
        break;
    case 9:
```

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66          Cos();
67          break;
68      case 10:
69          Tan();
70          break;
71      case 11:
72          Cube_root();
73          break;
74      case 12:
75          Log();
76          break;
77      case 13:
78          Inverse_sin();
79          break;
80      case 14:
81          Inverse_cos();
82          break;
83      case 15:
84          Inverse_tan();
85          break;
86      case 16:
87          Factorial();
88          break;
89      default:
90          printf("You entered wrong input.");
91
92
93      }
94      return 0;
95  }
96
97  void Add()
98  {
99      float num1, sum=0.0;
100     int i=1;
101     printf("\n");
102     printf("                        Enter value one after another & press '0' to get the result.\n");
103     printf("                         ********************************************************\n");
104     do
105     {
106         printf("Value-%d: ", i);
107         scanf("%f", &num1);
108
109         sum = sum + num1;
110         ++i;
111     }while(num1!=0);
112     printf("\nResult is: %.2f\n", sum);
113
114
115 }
116 void Subtract()
117 {
118     float num1, sum=0.0;
119     int i=1;
120     printf("\n");
121     printf("                        Enter value one after another & press '0' to get the result.\n");
122     printf("                        ********************************************************\n");
123     do
124     {
125         printf("Value-%d: ", i);
126         scanf("%f", &num1);
127
128         if(i==1)
129            sum =sum+num1;
130         else
131            sum =sum-num1;
```

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132
133         ++i;
134     }while(num1!=0);
135     printf("\nResult is: %.2f\n", sum);
136
137
138 }
139 void Division()
140 {
141     float num1, sum=0.0;
142     int i=1;
143     printf("\n");
144     printf("                        Enter value one after another & press '1' to get the result.\n");
145     printf("                        ************************************************************\n");
146     do
147     {
148         printf("Value-%d: ", i);
149         scanf("%f", &num1);
150
151
152
153         if(i==1)
154            sum =num1;
155         else
156         {
157             if(num1==0){
158             printf("\n**Math Error.**\n");
159             break;
160             }
161           sum =sum/num1;
162         }
163         ++i;
164     }while(num1!=1);
165
166     if(num1!=0)
167     printf("\nResult is: %.2f\n", sum);
168
169 }
170 void Multiplication()
171 {
172     float num1, mul=1.0;
173     int i=1;
174     printf("\n");
175     printf("                        Enter value one after another & press '1' to get the result.\n");
176     printf("                        ************************************************************\n");
177     do
178     {
179         printf("Value-%d: ", i);
180         scanf("%f", &num1);
181
182         mul=mul*num1;
183         ++i;
184     }while(num1!=1);
185     printf("\nResult is: %.2f\n", mul);
186 }
187 void Remainder()
188 {
189     int num1, sum;
190     int i=1;
191     printf("\n");
192     printf("                        Enter value one after another & press '1' to get the result.\n");
193     printf("                        ************************************************************\n");
194     printf("Value-%d: ", i);
195     scanf("%d", &num1);
196     do
197     {
```

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198
199         if(i==1)
200            sum =num1;
201         else
202         {
203             if(num1==0){
204             printf("\n**Math Error.**\n");
205             break;
206             }
207           sum =sum%num1;
208         }
209         ++i;
210         printf("Value-%d: ", i);
211         scanf("%d", &num1);
212     }while(num1!=1);
213
214     if(num1!=0);
215     printf("\nRemainder is: %d\n", sum);
216
217 }
218 void Square_root()
219 {
220     float m,n;
221     float num;
222     n=0.0001;
223     printf("ENTER A NUMBER : ");
224     scanf("%f",&num);
225
226
227     for(m=0;m<num;m=m+n)
228     {
229         if(num<0)
230            break;
231         if((m*m)>num)
232         {
233            m=m-n;
234            break;
235         }
236     }
237
238     if(num<0)
239        printf("Math Error.\n");
240     else
241        printf("%.2f",m);
242
243 }
244 void Power()
245 {
246     float num1, num2, mul=1.0, c1, i=0;
247     printf("Enter the Base first then it's Power: ");
248     scanf("%f %f", &num1, &num2);
249     if(num2<0)
250     {
251         ++i;
252         num2 = -num2;
253     }
254
255
256     for(c1=1; c1<=num2; c1++)
257     {
258         mul = mul * num1;
259     }
260     if(i>0)
261         mul = 1.0/mul;
262     printf("Result is: %.2f", mul);
263 }
```

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void Sin()
{
    int i, n;
    float x, sum, t;


    printf("Enter the value for x : ");
    scanf("%f",&x);

    printf("Enter the value for n : ");
    scanf("%d",&n);

    x=x*3.14159/180;
    t=x;
    sum=x;

    for(i=1;i<=n;i++)
    {
        t=(t*(-1)*x*x)/(2*i*(2*i+1));
        sum=sum+t;
    }

    printf("The value of Sin(%f) = %.4f\n",x,sum);
    printf("Using library function the value of Sin(%f) = %.4f\n", x, sin(x));


}
void Cos()
{
    int i, n;
    float x, sum=1, t=1;

    printf("Enter the value for x: ");
    scanf("%f",&x);

    printf("Enter the value for n: ");
    scanf("%d",&n);

    x=x*3.14159/180;

    for(i=1;i<=n;i++)
    {
        t=t*(-1)*x*x/(2*i*(2*i-1));
        sum=sum+t;
    }
    printf("\n");

    printf("The value of Cos(%f) is : %.4f\n", x, sum);
    printf("Using library function the value of Cos(%f) is: %.4f\n", x, cos(x));

}
void Tan()
{
    float num1, result;
    printf("Enter a number(in degree's) to find it's Tangent value: ");
    scanf("%f", &num1);

    num1=num1*(3.1416/180.0);

    result = tan(num1);
    printf("Tan(%f)= %f", num1, result);
}
void Cube_root()
{
    float num1, result;
    printf("Enter the number to find it's Cube Root: ");
```

```c
    scanf("%f", &num1);

    if(num1<0)
        num1= -num1;

    result = pow(num1, 0.333333333333333);
    if(num1<0)
        printf("Cube root of - %.2f= - %.2f\n", num1, result);
    else
        printf("Cube root of  %.2f=  %.2f\n", num1, result);
}
void Log()
{
  int i, j;
  float sum = 0.0f;
  float power;
  float x;
  printf("enter x for sum up to 7th term: ");
  scanf("%f", &x);
  for (i = 1; i <= 7; i++) {
    power = 1.0f;
    for (j = 0; j < i; j++) {
      power = power * ((x - 1.0f) / x);
    }
    sum += (1.0f / i) * power;
  }

  printf("ln(%f) = \n%f\n%lf\n", x, sum, log(x));

}
void Inverse_sin()
{
    float num1, result;
    printf("Enter a number to find it's Sine Inverse: ");
    scanf("%f", &num1);

    result = asin(num1);
    printf("Inverse Sine(%f)= %.2f", num1, result);
}
void Inverse_cos()
{
    float num1, result;
    printf("Enter a number to find it's Cosine Inverse: ");
    scanf("%f", &num1);

    result = acos(num1);
    printf("Inverse Cos(%f)= %.2f", num1, result);
}
void Inverse_tan()
{
    float num1, result;
    printf("Enter a number to find it's Tangent Inverse: ");
    scanf("%f", &num1);

    result = atan(num1);
    printf("Inverse Tan(%f)= %.2f", num1, result);
}
void Factorial()
{
    int num1,p=0, c1, result=1;

    printf("Enter a number to find it's Factorial: ");
    scanf("%d", &num1);

    if(num1<0)
        {
```

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            ++p;
            num1 = -num1;
        }

    for(c1=1; c1<=num1; c1++)
    {
        result = result * c1;
    }
    if(p>0)
          printf("Factorial of - %d is: - %d\n", num1, result);
    else
        printf("Factorial of %d is: %d\n", num1, result);
}
```