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

int factorial(int n) {
if (n == 0) return 1;
return n * factorial(n - 1);
}

void displayMenu() {
printf("Advanced Scientific Calculator\n");
printf("1. Addition\n2. Subtraction\n3. Multiplication\n4. Division\n");
printf("5. Modulus\n6. Factorial\n7. Table\n8. Complement\n");
printf("9. Square\n10. Cube\n11. Power\n12. Sine\n13. Cosine\n");
printf("Choose an option: \n");
}

int main() {
int choice, a, b;
double result, angle;

while (1) {
displayMenu();
scanf("%d", &choice);

switch (choice) {
case 1:
printf("Enter two numbers: ");
scanf("%d %d", &a, &b);
result = a + b;
printf("Result: %d + %d = %.2lf\n\n", a, b, result);
break;
case 2:
printf("Enter two numbers: ");
scanf("%d %d", &a, &b);
result = a - b;
printf("Result: %d - %d = %.2lf\n\n", a, b, result);
break;
case 3:
printf("Enter two numbers: ");
scanf("%d %d", &a, &b);
result = a * b;
printf("Result: %d * %d = %.2lf\n\n", a, b, result);
break;
case 4:
printf("Enter two numbers: ");
scanf("%d %d", &a, &b);
if (b != 0) {
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result = (double)a / b;
printf("Result: %d / %d = %.2lf\n\n", a, b, result);
} else {
printf("Error: Division by zero\n\n");
}
break;
case 5:
printf("Enter two numbers: ");
scanf("%d %d", &a, &b);
if (b != 0) {
result = a % b;
printf("Result: %d %% %d = %.0lf\n\n", a, b, result);
} else {
printf("Error: Division by zero\n\n");
}
break;
case 6:
printf("Enter a number: ");
scanf("%d", &a);
result = factorial(a);
printf("Factorial of %d is %.0lf\n\n", a, result);
break;
case 7:
printf("Enter a number: ");scanf("%d", &a);
printf("Table of %d:\n", a);
for (int i = 1; i <= 10; ++i) {
printf("%d x %d = %d\n", a, i, a * i);
}
printf("\n");
break;
case 8:
printf("Enter a number: ");
scanf("%d", &a);
result = ~a;
printf("1's Complement of %d is %.0lf\n\n", a, result);
break;
case 9:
printf("Enter a number: ");
scanf("%d", &a);
result = a * a;
printf("Square of %d is %.0lf\n\n", a, result);
break;
case 10:
printf("Enter a number: ");
scanf("%d", &a);
result = a * a * a;
printf("Cube of %d is %.0lf\n\n", a, result);
break;
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case 11:
printf("Enter base and exponent: ");
scanf("%d %d", &a, &b);
result = pow(a, b);
printf("%d raised to the power %d is %.2lf\n\n", a, b, result);
break;
case 12:
printf("Enter angle in degrees: ");
scanf("%lf", &angle);
result = sin(angle * M_PI / 180.0);
printf("Sine of %.2lf degrees is %.2lf\n\n", angle, result);
break;
case 13:
printf("Enter angle in degrees: ");
scanf("%lf", &angle);
result = cos(angle * M_PI / 180.0);
printf("Cosine of %.2lf degrees is %.2lf\n\n", angle, result);
break;
default:
printf("Invalid option\n\n");
continue;
}
}
return 0;
}
```