

C-Programming / C / C Programs.md



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1283 lines (786 loc) · 19.9 KB

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Code

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Basic Simple C Programs

1. WAP(Write a program) to print "Hello World".

Expected Output

Hello World



Source Code

```
#include <stdio.h>

int main(){
    printf("Hello World");
    return 0;
}
```



2. WAP. to input a number and print them.

Test Data

Enter a number: 5



Expected Output

Number is 5



Source Code

```
#include <stdio.h>

int main(){
    int num;
```



```
printf("Enter a number");
scanf("%d", &num);

printf("Number is %d", num);

return 0;
}
```

3. WAP. to accept two numbers and print their addition, subtraction, multiplication, division.

Test Data

Enter 2 number: 5 10



Expected Output

Addition = 15
Subtraction = -5
Multiplication = 50
Division = 0



Source Code

```
#include <stdio.h>

int main(){

    int add, mul, sub, div, num1, num2;

    printf("\nEnter 2 number:");
    scanf("%d %d", &num1, &num2);

    add = num1 + num2;
    sub = num1 - num2;
    mul = num1 * num2;
    div = num1 / num2;

    printf("Addition = %d \nSubtraction = %d \nMultiplication = %d \nDivision = %d"
    , add, sub, mul, div);

    return 0;
}
```



4. WAP. to input a number and change the sign.

Test Data

Enter a number: 5



Enter a number: -5

Expected Output

Changed number = -5
Changed number = 5

Source Code

```
#include <stdio.h>

int main(){
    int num;

    printf("Enter a number: ");
    scanf("%d", &num);

    num = num * -1;

    printf("Changed number = %d", num);
    return 0;
}
```

5. WAP. to input two number and display quotient and remainder.

Test Data

input number : 98 4

Expected Output

quotient = 24
remainder = 2

Source Code

```
#include <stdio.h>

int main(){
    int dividend, divisor, quotient, remainder;

    printf("Enter Dividend and Division: ");
    scanf("%d %d", &dividend, &divisor);

    quotient = dividend / divisor;
    remainder = dividend % divisor;

    printf("Quotient = %d Remainder = %d", quotient, remainder);

    return 0;
}
```

6. WAP. to display last digit of a number.

Test Data

Enter a number: 153



Expected Output

Last digit = 3



Source Code

```
#include <stdio.h>

int main(){
    int num;

    printf("Enter a number: ");
    scanf("%d", &num);

    num = num % 10;

    printf("Last digit = %d", num);

    return 0;
}
```



7. WAP. to accept a number from user and print it's square & cube in C language.

Test Data

Enter a number = 5



Expected Output

Square = 25 Cube = 125



Source Code

```
#include <stdio.h>

int main(){

    int num, cube, square;

    printf("Enter a number: ");
    scanf("%d", &num);
```



```
cube = num * num * num;
square = num * num;

printf("Square: %d Cube: %d \n", square, cube);

return 0;
}
```

8. WAP. to calculate Area and Circumference of a Circle.

Formula

Area of a Circle = πr^2

Circumference of a circle = $2\pi r$

Test Data

Enter Radius: 15



Expected Output

Area of a circle = 78.525002
Circumference of a circle = 31.410000



Source Code

```
#include <stdio.h>

int main(){

    float area, circum, radius, pi = 3.14153;

    printf("\nEnter Radius: ");
    scanf("%f", &radius);

    area = radius * radius * pi;
    circum = 2 * pi * radius;

    printf("Area of the circle: %f \n", area);
    printf("Circumference of the circle: %f \n", circum);

    return 0;
}
```



9. WAP. to input a number to compute the perimeter and area of a rectangle.

Formula

Perimeter of the rectangle = $2(\text{height} + \text{width})$

Area of Rectangle = $height * width$

Test Data

Enter height and width of the rectangle respectively: 12 5

Expected Output

Area of a rectangle = 60 square inches
Perimeter of a rectangle = 34 inches

Source Code

```
#include <stdio.h>

int main(){
    int height, width, area, perimeter;

    printf("Enter height and width of the rectangle respectively: ");
    scanf("%d %d", &height, &width);

    area = height * width;
    perimeter = 2 * (height + width);

    printf("Area of a rectangle = %d square inches \nPerimeter of a rectangle = %d inches\n");

    return 0;
}
```

10. WAP. to Calculate Percentage of 5 Subjects.

Test Data

Enter marks of 5 subjects:72 93 56 80 57

Expected Output

Your Overall Percentage: 71.599998

Source Code

```
#include <stdio.h>

int main(){

    float sanskrit, math, eng, hin, accounts, percentage, total;

    printf("Enter marks of 5 subjects:");
    scanf("%f %f %f %f %f", &sanskrit, &hin, &eng, &math, &accounts);
```

```
total = sanskrit + hin + eng + math + accounts;
percentage = total / 500 * 100;

printf("\nTotal Marks = %f \nYour Overall Percentage: %f", total,
percentage);

return 0;
}
```

11. WAP. to Calculate Simple Interest.

Formula

Simple Interest = $(p * r * t) / 100$;

p = Principal, **r** = Rate of interest, **t** = Time period

Test Data

```
Enter Principal Amount: 4500
Enter Rate of Interest: 9.5
Enter Time: 6
```



Expected Output

```
Simple interest: 2565.000000
```



Source Code

```
#include <stdio.h>

int main(){

    float si, amount, interest, time;

    printf("Enter Principal Amount: ");
    scanf("%f", &amount);

    printf("Enter Rate of Interest: ");
    scanf("%f", &interest);

    printf("Enter Time: ");
    scanf("%f", &time);

    si = (amount * interest * time) / 100;

    printf("Simple interest: %f", si);

    return 0;
}
```



12. WAP. to print area of a triangle.

Formula

$$\text{Triangle} = 0.5 * \text{Base} * \text{Height}$$

Test Data

Enter BASE and HEIGHT: 15 30



Expected Output

Area of Triangle : 225.000000



Source Code

```
#include <stdio.h>

int main(){

    float area, base, height;

    printf("Enter BASE and HEIGHT: ");
    scanf("%f %f", &base, &height);

    area = 0.5 * base * height;

    printf("Area of Triangle : %f", area);

    return 0;
}
```



13. WAP. to accept marks of 3 subjects of a student, Calculate total of 3 subjects and average in c language

Formula

$$\text{Average} = \text{Sanskrit} + \text{Hindi} + \text{Math} / 3$$

Test Data

Enter Marks of 3 subjects: 75 50 80



Expected Output

Total marks: 205.000000
Average marks: 68.333336



Source Code


```
#include <stdio.h>

int main(){

    float sub1, sub2, sub3, average, total;

    printf("Enter marks of 3 subjects: ");
    scanf("%f %f %f", &sub1, &sub2, &sub3);

    total = (sub1 + sub2 + sub3);
    average = total / 3;

    printf("\nTotal marks: %f", total);
    printf("\nAverage marks: %f", average);

    return 0;
}
```



14. WAP. to input paisa and convert it into rs. and paisa

Test Data

Enter paisa:2150



Expected Output

Total 21 Rs. and 50 Paisa



Source Code

```
#include <stdio.h>

int main(){
    int paisa, rs;

    printf("Enter paisa:");
    scanf("%d", &paisa);

    rs = paisa / 100;
    paisa = paisa % 100;

    printf("Total %d Rs. and %d Paisa", rs, paisa);

    return 0;
}
```



15. WAP. to print the following outputs: `https:\\www.google.com\\` in C language

Expected Output

Google Link: <https://www.google.com/>



Source Code

```
#include <stdio.h>

int main(){

    printf("Google Link: https://www.google.com/ ");

    return 0;
}
```



16. WAP. For Converting Temperature Celsius Into Fahrenheit and Fahrenheit to Celsius

Formula

Fahrenheit = $((9/5) * c) + 32$ // or you can use 1.8 in place of 9/5

celsius = $(f - 32) \times 5/9$

Test Data

Enter Celsius or Fahrenheit: 55



Expected Output

Celsius to Fahrenheit: 131.000000
Fahrenheit to Celsius: 12.777778



Source Code

```
#include <stdio.h>

int main(){
    float celFah, fahrenheit, celsius;

    printf("\nEnter Celsius or Fahrenheit: ");
    scanf("%f", &celFah);

    fahrenheit = (9.0 / 5.0 * celFah) + 32.0;
    celsius = (celFah - 32.0) * (5.0 / 9.0);

    printf("\nCelsius to Fahrenheit: %f", fahrenheit);
    printf("\nFahrenheit to Celsius: %f", celsius);

    return 0;
}
```



17. WAP. to Calculate Gross Salary of an Employee whose dearness allowance is 40% of basic salary and house rent allowance is 20% of basic salary.

Formula

$$\text{Gross Salary} = b + da + o$$

b = Basic Salary, **da** = Dearness Allowance **o** = Other Allowance

Test Data

Enter Basic Salary: 20000



Expected Output

Gross Salary = 32000



Source Code

```
#include <stdio.h>

int main(){

    int gs, bs, da, hra;

    printf("Enter Basic salary: ");
    scanf("%d", &bs);

    da = bs * 40 / 100;
    hra = bs * 20 / 100;
    gs = bs + da + hra;

    printf("Gross Salary = %d \n", gs);

    return 0;
}
```



18. WAP. to print profit and profit percentage. Selling price and cost price is given by user.

Formula

$$\text{Profit} = \text{selling} - \text{cost}$$

$$\text{Profit Percentage} = \frac{\text{profit}}{\text{cost}} * 100$$

Test Data

Expected Output

Source Code

```
int main(){
    int profit, profitPercentage, sellingPrice, costPrice;

    printf("Enter Selling price and Cost price respectively: ");
    scanf("%d %d", &sellingPrice, &costPrice);

    profit = sellingPrice - costPrice;
    profitPercentage = (profit * 100) / costPrice;

    printf("Total Profit = %d%% and Profit percentage = %d%%",
    profit, profitPercentage);

    return 0;
}
```

19. WAP. to calculate the remainder of 2 numbers without using % operator.

Test Data:

Enter 2 number: 10 5

Expected Output:

Remainder = 0

Source Code

```
#include <stdio.h>

int main(){
    int divisor, dividend, remainder, quotient;

    printf("Enter 2 dividend and divisor: ");
    scanf("%d %d", &dividend, &divisor);

    remainder = dividend - divisor * (dividend / divisor);

    printf("\nRemainder = %d", remainder);

    return 0;
}
```

20. WAP. that accepts two item's weight (floating points' values) and number of purchase (floating points' values) and calculate the average value of the items.

Test Data :

Weight - Item1: 15
No. of item1: 5

Weight - Item2: 25
No. of item2: 4

Expected Output:

Average Value = 19.444444

Source Code

```
#include <stdio.h>

int main(){
    float weight1, weight2, itemNum1, itemNum2, average;

    printf("Weight - Item1: ");
    scanf("%f", &weight1);

    printf("No. of Item1: ");
    scanf("%f", &itemNum1);

    printf("Weight - Item2: ");
    scanf("%f", &weight2);

    printf("No. of Item1: ");
    scanf("%f", &itemNum2);

    average = (weight1 * itemNum1 + weight2 * itemNum2) / (itemNum1 + itemNum2);

    printf("Average value of the item = %f", average);

    return 0;
}
```

21. WAP. to show swap of two numbers.

- i) using three variable
- ii) without using third variable.
- iii) swap within a single line.

Test Data :

Input two number a and b: 5 10

Expected Output:

a = 10 and b = 5

Source Code

```
#include <stdio.h>

int main(){
    int a, b, temp;

    printf("Enter two number a and b:");
    scanf("%d %d", &a, &b);

    // swap two number using third variable.
    // temp = a;
    // a = b;
    // b = temp;

    // Swap two number without using third variable.
    // a = a + b;
    // b = a - b;
    // a = a - b;

    // Swap two number within single line.
    b = a + b - (a = b);

    printf("a = %d and b = %d", a, b);

    return 0;
}
```



22. WAP. to SWAP (any format) three numbers.

- i) using four variable
- ii) without using four variable.
- iii) swap within a single line.



Test Data:

```
Enter 3 number : 5 10 15
```



Expected Output:

```
changed number = 15 5 10
```



Source Code

```
#include <stdio.h>

int main(){
    int a, b, c, temp;

    printf("Enter 3 number a, b and c: ");
    scanf("%d %d %d", &a, &b, &c);
```



```

// using four variable
// temp = a;
// a = b;
// b = c;
// c = temp;

// Without using four variable.
// a = a + b + c;
// b = a - b - c;
// c = a - b - c;
// a = a - b - c;

// Swap numbers within a single line.
a = (temp = a + b + c) - (b = temp - b - c) -
(c = temp - b - c);

printf("Changed number = %d %d %d", a, b , c);

return 0;
}

```

23. WAP. to merge three number. E.g. a= 1, b= 2, c = 8 is 128.

Test Data:

Enter 3 number: 1 2 3



Expected Output:

merge number = 123



Source Code

```

#include <stdio.h>

int main(){
    int a, b, c, merge;

    printf("Enter 3 number:\n");
    scanf("%d %d %d", &a, &b, &c);

    merge = a * 10;
    merge = merge + b;
    merge = merge * 10;
    merge = merge + c;

    printf("merge number = %d", merge);

    return 0;
}

```



24 .WAP. to Print the range of a number. E.g. number 78 is between 70 and 79, 102 is between 100 and 109.

Test Data:

Enter a number : 78

Enter a number : 102

Expected Output:

78 number is between 70 and 79

102 number is between 100 and 109

Source Code

```
#include <stdio.h>

int main(){
    int num, x, y;

    printf("Enter a number:");
    scanf("%d", &num);

    x = num / 10 * 10;
    y = x + 9;

    printf("%d number is between %d and %d", num, x, y);

    return 0;
}
```

25. WAP. to input a 3 digit number and reverse it.

Test Data:

number = 123

Expected Output:

reverse number = 321

Source Code

```
#include <stdio.h>

int main(){
    int num, rev, rem;
```



```
printf("Enter a 3 digit number: ");
scanf("%d", &num);

rem = num % 10;
num = num / 10;
rev = rev * 10 + rem;
rem = num % 10;
num = num / 10;
rev = rev * 10 + rem;
rem = num % 10;
num = num / 10;
rev = rev * 10 + rem;

printf("Reverse number = %d\n", rev);

return 0;
}
```

26. WAP. to calculate sum of the digits of three digit number.

Test Data

Enter a 3 digit number: 123



Expected Output

Sum = 6



Source Code

```
#include <stdio.h>

int main(){
    int num, sum = 0;

    printf("Enter a number: ");
    scanf("%d", &num);

    sum = sum + num % 10;
    num = num / 10;
    sum = sum + num % 10;
    sum = sum + num / 10;

    printf("Sum = %d", sum);

    return 0;
}
```



27. WAP. to input a 5 digit number and calculate the sum of last and first digit number.

Test Data:

number : 12345



Expected Output:

sum = 6



Source Code

```
#include <stdio.h>

int main(){
    int num, sum = 0;

    printf("Enter a 5 digit number: ");
    scanf("%d", &num);

    sum = sum + (num % 10) + (num / 10000);

    printf("Sum = %d", sum);

    return 0;
}
```



28. WAP. to convert specified days into years, weeks and days.

Note: Ignore leap year.

Test Data

Enter number of days: 415



Expected Output

Years = 1 Weeks = 7 Days = 1



Source Code

```
#include <stdio.h>

int main(){
    int days, years, weeks;

    printf("Enter number of days: ");
    scanf("%d", &days);

    years = days / 365;
    weeks = (days % 365) / 7;
    days = (days % 365) % 7;
```



```
printf("Years = %d Weeks = %d Days = %d", years, weeks, days);

return 0;
}
```

29. WAP. to convert a given integer (in seconds) to hours, minutes and seconds.

Test Data :

Input seconds: 25300



Expected Output:

There are:
H:M:S - 7:1:40



Source Code

```
#include <stdio.h>

int main(){
    int seconds, minutes, hours;

    printf("Enter seconds: ");
    scanf("%d", &seconds);

    hours = seconds / 3600;
    seconds = seconds % 3600;
    minutes = seconds / 60;
    seconds = seconds % 60;

    printf("\nThere are:\nH:M:S - %d:%d:%d", hours, minutes, seconds);

    return 0;
}
```



30. WAP. to convert a given integer (in millimeters) to kilometers, meters and centimeters.

1 centimeter = 10 millimeters.
1 meter = 100 centimeters.
1 meter = 1,000 millimeters.
1 kilometer = 1,000 meters.



Test Data :

Input millimeters: 2535220



Expected Output:

```
2.53 kilometers
2535.22 Meters
253522.0 Centimeters
```



Source Code

```
#include <stdio.h>

int main(){
    float millimeters, kilometers, meters, centimeters;

    printf("Enter millimeters:");
    scanf("%f", &millimeters);

    centimeters = millimeters / 10;
    meters = centimeters / 100;
    kilometers = meters / 1000;

    printf("Kilometers = %f Meters = %f Centimeters = %f", kilometers, meters, centimeter:

    return 0;
}
```



31. WAP. to read an amount (integer value) and break the amount into smallest possible number of bank notes.

Test Data :

```
Input the amount: 375
```



Expected Output:

```
There are:
3 Note(s) of 100.00
1 Note(s) of 50.00
1 Note(s) of 20.00
0 Note(s) of 10.00
1 Note(s) of 5.00
0 Note(s) of 2.00
0 Note(s) of 1.00
```



Source Code

```
#include <stdio.h>

int main(){
    int amount, hundred, fifty, twenty, ten, five, two, one;

    printf("Enter amount: ");
```



```

scanf("%d", &amount);

hundred = amount / 100;
fifty = (amount % 100) / 50;
twenty = ((amount % 100) % 50) / 20;
amount = ((amount % 100) % 50) % 20;
ten = amount / 10;
amount = amount % 10;
five = amount / 5;
amount = amount % 5;
two = amount / 2;
amount = amount % 2;
one = amount;

printf("\n%d Note(s) of 100.00", hundred);
printf("\n%d Note(s) of 50.00", fifty);
printf("\n%d Note(s) of 20.00", twenty);
printf("\n%d Note(s) of 10.00", ten);
printf("\n%d Note(s) of 5.00", five);
printf("\n%d Note(s) of 2.00", two);
printf("\n%d Note(s) of 1.00", one);

return 0;
}

```

32. Write a C program to calculate the distance between the two points

Formula

$$\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

Test Data :

Input x1: 25
Input y1: 15
Input x2: 35
Input y2: 10



Expected Output:

Distance between the said points: 11.1803



Source Code

```

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

int main(){
    float x1, x2, y1, y2, distance;

    printf("Enter x1, y1, x2 and y2 respectively:");
    scanf("%f %f %f %f", &x1, &y1, &x2, &y2);

    distance = sqrt(pow((x1 - x2), 2) + pow((y1 - y2), 2));
}

```



```
printf("The distance between the two points = Square root(%f)", distance);

return 0;
}
```

33. WAP. to Print the Ascii Value of the Character.

Test Data

Enter The Character: c



Expected Output

Value = 99



Source Code

```
#include <stdio.h>

int main(){
    char a;

    printf("Enter The Character: ");
    scanf("%c", &a);

    printf("Value = %d", a);

    return 0;
}
```



34. WAP. to accept 3 characters and print the sum of their [ascii](#).

Test Data

Enter 3 character: a b c



Expected Output

Sum of the 3 character = 294



Source Code

```
#include <stdio.h>

int main(){
    char a, b, c;
    int sum;
```



```

printf("Enter 3 character: ");
scanf("%c %c %c", &a, &b, &c);

sum = (int)a + (int)b + (int)c;

printf("Sum of the 3 character = %d", sum);

return 0;
}

```

35. WAP. to Display The Size of Different Data Types

Data Type	Size (bytes)	Range	Format Specifier
int	2	-2,147,483,648 to 2,147,483,647	%d
long int	4	-2,147,483,648 to 2,147,483,647	%ld
float	4	1.2E-38 to 3.4E+38	%f
double	8	1.7E-308 to 1.7E+308	%lf
long double	12	3.4E-4932 to 1.1E+4932	%Lf
char	1	-128 to 127	%c

Source Code

```

#include <stdio.h>

int main() {

    printf("Size of Int Data Types in C = %2d bytes \n", sizeof(short int));

    printf("Size of Long Int Data Types in C = %2d bytes \n", sizeof(long int));

    printf("Size of Float Data Types in C = %2d bytes \n", sizeof(float));

    printf("Size of Double Data Types in C = %2d bytes \n", sizeof(double));

    printf("Size of Long Double Data Types in C = %2d bytes \n", sizeof(long double));

    printf("Size of Char Data Types in C = %2d bytes \n", sizeof(char));

    return 0;
}

```