1)WAP to check for a valid traingle.

```
#include<stdio.h>
int main() {
int a,b,c=0;
printf("Enter sides: ");
scanf("%d" "%d" "%d",&a,&b,&c);
if(a+b>c && b+c>a && a+c>b) {
printf("Valid");
}
return 0;
}
```

2) WAP to check if a character is an Alphabet.

```
#include<stdio.h>
int main()
{
int c=0;
printf("Enter character: ");
scanf("%c" ,&c);
if(c>='a' && c<='z' || c>='A' && c<='Z')
printf("is Alphabet");
return 0;
}
```

3) WAP to check if a Year is a leap Year.

```
#include<stdio.h>
int main() {
int year=0;
printf("Enter year: ");
scanf("%d" ,&year);
if(year%400==0 && year%100==0)
printf("leap year");
else if(year%4==0 && year%100!=0)
printf("leap year");
return 0;
}
```

4) WAP to check if a number is divisible by 3.

```
#include<stdio.h>
int main() {
int num=0;
```

```
printf("Enter number: ");
scanf("%d" ,&num);
if(num%3==0)
 printf("Divisible");
return 0;
 }
```

5) WAP to check for Uppercase Characters.

```
 #include<stdio.h>
int main() {
 int c=0;
printf("Enter character: ");
scanf("%c" ,&c);
 if(c>='A' && c<='Z')
 printf("is uppercase");
 return 0;
 }
```

6) WAP to check for Special character.

```
 #include<stdio.h>
 int main() {
 int c=0;
 printf("Enter character: ");
scanf("%c" ,&c);
 if ((c < '0' || c > '9') && (c < 'A' || c > 'Z') && (c < 'a' || c > 'z'))
printf("is special character");
return 0;
 }
```

7) wap to determine largest of three numbers

```
 #include<stdio.h>
 int main() {
 int a,b,c;
printf("Enter the numbers: ");
scanf("%d" "%d" "%d",&a,&b,&c);
 if(a>b && a>c) {
 printf("%d is largest",a);
 }
 else if(b>a && b>c) {
 printf("%d is largest",b);
} else {
```

```
printf("%d is largest",c);
 }
 return 0;
 }
```

8) wap to determine the grade of students

```
 #include<stdio.h>
 int main()
 {
 int mark;
 printf("Enter the mark: ");
 scanf("%d",&mark);
 if(mark>=90)
 printf("Grade A");
else if(mark<90 && mark>=80)
 printf("Grade B");
else if(mark<80 && mark>=70)
 printf("Grade C");
else if(mark<70 && mark>=60)
printf("Grade D");
 else if(mark<=0 )
printf("Invalid mark");
else printf("Grade F");
 return 0;
 }
```

9)wap to determine eligibility to vote

```
#include <stdio.h>

int main() {
    int age = 0;
    printf("Enter age: ");
    scanf("%d", &age);

    if (age >= 18) {
        printf("Eligible to vote\n");
    } else {
        printf("Not eligible to vote\n");
    }

    return 0;
}
```

10)WAP to calculate the electricity bill based on the formula mentioned below
Calculations To calculate your electricity bill, follow these steps:
Watts = (amps) x (volts)
Kilowatt-hours = (watts) x (usage) / 1000.
Cost = (kilowatt-hours) x (electricity rate)
1. Subtract the current meter reading from the previous month's reading to find the energy consumption.
2. Multiply the units consumed by the per-unit charges based on the applicable slabs (e.g., Rs. 4.22 for 1-100 units, Rs. 5.02 for 101-200 units).
3. Add the fixed charge and energy duty (e.g., Rs. 40 fixed charge and Rs. 0.15 per unit) to the energy charges.
4. The sum of the energy charges, fixed charge, and energy duty gives you the total bill amount.
Example: If you consumed 250 units with the applicable slabs mentioned above, the energy charges would be Rs. 1218. Adding the fixed charge and energy duty, the total bill amount would be Rs. 1296

```
#include <stdio.h>

int main() {
    int prev, current, units, amp, volt, rate, dailyusage, watts, dutyrate, fixedcharge;
    float killowatthr, energycharge, totalcharge;

    printf("Enter the previous meter reading: ");
    scanf("%d", &prev);

    printf("Enter the current meter reading: ");
    scanf("%d", &current);

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

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

    printf("Enter daily usage (in hours): ");
    scanf("%d", &dailyusage);

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

    printf("Enter fixed charge: ");
```

```
    scanf("%d", &fixedcharge);

    units = current - prev;
    watts = amp * volt;
    killowatthr = (watts * dailyusage * 30) / 1000.0;
    dutyrate = killowatthr * rate;

    if (units <= 100) {
        energycharge = units * 4.22;
    } else if (units <= 200) {
        energycharge = (100 * 4.22) + ((units - 100) * 5.02);
    } else {
        energycharge = (100 * 4.22) + (100 * 5.02) + ((units - 200) * rate);
    }

    totalcharge = dutyrate + energycharge + fixedcharge;

    printf("The total charge is: %.2f\n", totalcharge);

    return 0;
}
```

11) In this challenge, you are to create a C program that calculates your weekly pay.

•The program should ask the user to enter the number of hours worked in a week via the keyboard

•The program should display as output the gross pay, the taxes, and the net pay

•The following assumptions should be made: Basic pay rate = $12.00/hr Overtime (in excess of 40 hours) = time and a half

•Tax rate: 15% of the first $300 20% of the next $150 25% of the rest -You will need to utilize if/else statements

```
#include <stdio.h>

int main() {
    float hours, grossPay, taxes, netPay;
    float basicRate = 12.00, overtimeRate = 18.00;

    printf("Enter the number of hours worked in a week: ");
    scanf("%f", &hours);

    if (hours > 40) {
        grossPay = (40 * basicRate) + ((hours - 40) * overtimeRate);
    } else {
        grossPay = hours * basicRate;
```

```
    }

    if (grossPay <= 300) {
        taxes = grossPay * 0.15;
    } else if (grossPay <= 450) {
        taxes = (300 * 0.15) + ((grossPay - 300) * 0.20);
    } else {
        taxes = (300 * 0.15) + (150 * 0.20) + ((grossPay - 450) * 0.25);
    }

    netPay = grossPay - taxes;

    printf("Gross Pay: $%.2f\n", grossPay);
    printf("Taxes: $%.2f\n", taxes);
    printf("Net Pay: $%.2f\n", netPay);

    return 0;
}
```

12) WAP using switch case for calculator?

```
#include <stdio.h>

int main() {
    char operator;
    float num1, num2, result;

    printf("Enter an operator (+, -, *, /): ");
    scanf(" %c", &operator);

    printf("Enter two operands: ");
    scanf("%f %f", &num1, &num2);

    switch (operator) {
        case '+':
            result = num1 + num2;
            printf("Result: %.2f + %.2f = %.2f\n", num1, num2, result);
            break;

        case '-':
            result = num1 - num2;
            printf("Result: %.2f - %.2f = %.2f\n", num1, num2, result);
            break;
```

```
        case '*':
            result = num1 * num2;
            printf("Result: %.2f * %.2f = %.2f\n", num1, num2, result);
            break;

        case '/':
            if (num2 != 0) {
                result = num1 / num2;
                printf("Result: %.2f / %.2f = %.2f\n", num1, num2, result);
            } else {
                printf("Error: Division by zero is not allowed.\n");
            }
            break;

        default:
            printf("Error: Invalid operator\n");
    }

    return 0;
}
```

13) WAP to reverse a number

```
#include <stdio.h>

int main() {
    int number, reversed = 0, remainder;

    printf("Enter an integer: ");
    scanf("%d", &number);

    while (number != 0) {
        remainder = number % 10;
        reversed = reversed * 10 + remainder;
        number /= 10;
    }

    printf("Reversed number: %d\n", reversed);

    return 0;
}
```

14)wap to find no of digits in a number

```c
#include <stdio.h>

int main() {
    int n, cnt = 0;

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

    if (n == 0) {
        cnt = 1; // Special case: if the number is 0, it has 1 digit
    } else {
        while (n > 0) {
            cnt = cnt + 1;
            n = n / 10;
        }
    }

    printf("Number of digits: %d\n", cnt);

    return 0;
}
```

15) WAP to print Fibonacci Series up to a Given Number.

```c
#include <stdio.h>
int main() {
    int limit, first = 0, second = 1, next;

    printf("Enter the limit for the Fibonacci series: ");
    scanf("%d", &limit);

    printf("Fibonacci Series up to %d: ", limit);

    while (first <= limit) {
        printf("%d ", first);
        next = first + second;
        first = second;
        second = next;
    }

    printf("\n");
    return 0;
}
```

16) WAP to print factorial of a number.

```
#include <stdio.h>

int main() {
    int num, i, fact = 1;

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

    if (num < 0) {
        printf("Factorial is not defined for negative numbers.\n");
    } else {
        for (i = 1; i <= num; i++) {
            fact = fact * i;
        }
        printf("Factorial of %d is %d\n", num, fact);
    }

    return 0;
}
```

17) WAP to check whether the number is Prime or not.

```
#include <stdio.h>

int main() {
    int num, isPrime = 1;

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

    if (num <= 1) {
        isPrime = 0;
    } else {
        for (int i = 2; i <= num / 2; i++) {
            if (num % i == 0) {
                isPrime = 0;
                break;
            }
        }
    }

    if (isPrime == 1) {
```

```
        printf("%d is a prime number.\n", num);
    } else {
        printf("%d is not a prime number.\n", num);
    }

    return 0;
}
```

18) WAP to print lower case alphabets.

```
#include <stdio.h>

int main() {
    char ch;

    for (ch = 'a'; ch <= 'z'; ch++) {
        printf("%c ", ch);
    }

    printf("\n");
    return 0;
}
```