ASSIGNMENT-1

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1. Write a program that asks the user to input a year and checks if it's a leap year.

```
#include <stdio.h>


int main() {
    int year;
    printf("Enter a year: ");
    scanf("%d", &year);

    if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0))
{
        printf("%d is a leap year.\n", year);
    } else {
        printf("%d is not a leap year.\n", year);
    }

    return 0;
}
```

2. Write a program to calculate the grade of a student based on their marks. Use conditions:

Marks >= 90: Grade A

- **80 <= Marks < 90: Grade B**
- **70 <= Marks < 80: Grade C**
- **60 <= Marks < 70: Grade D**
- **Marks < 60: Fail**

```
#include <stdio.h>


int main() {
    int marks;
    printf("Enter the marks obtained: ");
    scanf("%d", &marks);


    if (marks >= 90) {
        printf("Grade A\n");
    } else if (marks >= 80) {
        printf("Grade B\n");
    } else if (marks >= 70) {
        printf("Grade C\n");
```

```
    } else if (marks >= 60) {
        printf("Grade D\n");
    } else {
        printf("Fail\n");
    }

    return 0;
}
```

3. Write a program to find the factorial of a number using a for loop.

```
#include <stdio.h>

int main() {
    int n, i;
    unsigned long long factorial = 1;

    printf("Enter a number to find its factorial: ");
    scanf("%d", &n);

    for (i = 1; i <= n; i++) {
```

```
        factorial *= i;
    }

    printf("The factorial of %d is: %llu\n", n, factorial);
    return 0;
}
```

4. Write a program to print all prime numbers between 1 and n, where n is entered by the user.

```
#include <stdio.h>

int main() {
    int n, i, j, isPrime;

    printf("Enter a number n to find all prime numbers up to n: ");
    scanf("%d", &n);

    printf("Prime numbers between 1 and %d:\n", n);
    for (i = 2; i <= n; i++) {
        isPrime = 1; // Assume i is prime
```

```
        for (j = 2; j * j <= i; j++) {
            if (i % j == 0) {
                isPrime = 0; // Not prime
                break;
            }
        }
        if (isPrime) {
            printf("%d ", i);
        }
    }
    printf("\n");
    return 0;
}
```

5. Write a program to swap the values of two variables without using a third variable (using arithmetic operations).

```
#include <stdio.h>

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

```
    printf("Enter the first number (x): ");
    scanf("%d", &x);
    printf("Enter the second number (y): ");
    scanf("%d", &y);

    printf("Before swapping: x = %d, y = %d\n", x, y);
    x = x + y;
    y = x - y;
    x = x - y;
    printf("After swapping: x = %d, y = %d\n", x, y);

    return 0;
}
```