PF lab 5 Assignment

Section 1

QNO.1 Write a program that categorizes a person's age into different life stages: Child, Teenager, Adult, and Senior, using nested if-else statements.

PFlab > lab5 > C lab5s1q1.c > ...

```c
#include<stdio.h>
int main(void)
{
    int age;
    printf("Enert age:");
    scanf("%d",&age);
    if(age >= 1&&age <= 10)
    {
        printf("You are child");
    }
    else if(age > 10&&age <=17)
    {
        printf("You are teenager");
    }
    else if(age > 17&&age <= 30)
    {
        printf("You are an adult");
    }
    else if(age > 30&&age <= 100)
    {
        printf("You are a senior");
    }
    else {
        printf("Invalid age");
    }
    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH ERROR

TERMINAL

```
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s1q1
You are child
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s1q1
You are teenager
Enert age:29
You are an adult
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s1q1
Enert age:50
You are a senior
PS C:\UNI ASSIGNMENT\pflab\lab5> 101
101
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s1q1
Enert age:101
Invalid age
PS C:\UNI ASSIGNMENT\pflab\lab5>
```

QNO.2 Create a program that determines if a number is positive, negative, or zero, and if it's positive, checks if it's an even or odd number.

PFlab > lab5 > C lab5s1q2.c > ...

```c

#include<stdio.h>
int main(void)
{
    int num;
    printf("Enter the number:");
    scanf("%d",&num);
    if(num > 0)
    {
        if(num % 2 == 0)
        {
            printf("It is a positive and an even number");
        }
        else {
            printf("It is a positive and an odd number");
        }
    }
    else if(num == 0)
    {
        printf("The number is zero");
    }
    else {
        printf("It is negative number");
    }
    return 0;
}

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH ERROR

TERMINAL

```
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s1q2
Enter the number:2
It is a positive and an even number
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s1q2
Enter the number:3
It is a positive and an odd number
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s1q2
Enter the number:0
The number is zero
PS C:\UNI ASSIGNMENT\pflab\lab5>
```

Section 2

QNO.1 Write a program that checks if a number is divisible by both 3 and 5 using logical operators.

PFlab > lab5 > C lab5s2q1.c > main(void)

```c
#include<stdio.h>
int main(void)
{
    int num;
    printf("Enter the number:");
    scanf("%d",&num);
    if(num % 3 == 0&&num % 5 == 0)
    {
        printf("The number is divisible by both 3 and 5");
    }
    else {
        printf("Enter valid number");
    }
    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH ERROR

TERMINAL

```
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s2q1
Enter the number:15
The number is divisible by both 3 and 5
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s2q1
Enter the number:16
Enter valid number
```

QNO.2 Create a program that checks if a person is eligible to vote based on their age and citizenship status.

PFlab > lab5 > C lab5s2q2.c > main(void)

```c
#include<stdio.h>
int main(void)
{
    int age;
    char citizen_ship[4];
    printf("Enter your Age:");
    scanf("%d",&age);
    printf("Enter your citizen status:");
    scanf(" %s",&citizen_ship);
    if(citizen_ship[0] == 'y' && citizen_ship[1] == 'e' && citizen_ship[2] == 's' && age >= 18)
    {
        printf("You are eligible to vote");
    }
    else {
        printf("You are not eligible to vote");
    }
    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH ERROR

TERMINAL

```
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s2q2
Enter your Age:18
Enter your citizen status:yes
You are eligible to vote
PS C:\UNI ASSIGNMENT\pflab\lab5>
```

Section 3

QNO.1Write a program using a ternary operator to find the maximum of two numbers.

PFlab > lab5 > C lab5s3q1.c > main(void)

```c
#include<stdio.h>
int main(void)
{
    int num1, num2;
    printf("Enter the first number: ");
    scanf("%d",&num1);
    printf("Enter the second number: ");
    scanf("%d",&num2);
    (num1 > num2)?printf("number one is greater"):printf("number two is greater");

    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH ERROR

TERMINAL

```
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s3q1
Enter the first number: 5
Enter the second number: 3
number one is greater
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s3q1
Enter the first number: 90
Enter the second number: 100
number two is greater
PS C:\UNI ASSIGNMENT\pflab\lab5>
```

QNO.2 Use the ternary operator to check if a number is positive, negative, or zero.

PFlab > lab5 > C lab5s3q2.c > main(void)

```c
#include<stdio.h>
int main(void)
{
    int num;
    printf("Enter the number: ");
    scanf("%d",&num);
    (num > 0)?printf("The number is positive"):(num == 0)?printf("The number is zero"):printf("The number is negative");

    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH ERROR

TERMINAL

```
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s3q2
Enter the number: 1
The number is positive
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s3q2
Enter the number: -1
The number is negative
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s3q2
Enter the number: 0
The number is zero
PS C:\UNI ASSIGNMENT\pflab\lab5>
```

Section 4

QNO.1 Write a program to swap two numbers using bitwise XOR.

PFlab > lab5 > C lab5s4q1.c > main(void)

```c
#include<stdio.h>
int main(void)
{
    int a, b;
    printf("Enter the value of a: ");
    scanf("%d",&a);
    printf("Enter the value of b: ");
    scanf("%d",&b);
    a = a^b;
    b = a^b;
    a = a^b;
    printf("The value of a is: %d\n",a);
    printf("The value of b is: %d",b);

    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH ERROR

TERMINAL

```
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s4q1
Enter the value of a: 4
Enter the value of b: 9
The value of a is: 9
The value of b is: 4
PS C:\UNI ASSIGNMENT\pflab\lab5>
```

QNO.2 Create a program that counts the number of 1s in the binary representation of a number.

PFlab > lab5 > C lab5s4q2.c > main()

```c
#include<stdio.h>

int main() {
    int num, count1 = 0, count2;

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

    while (num > 0) {
        count1 += num & 1;
        num >>= 1;
    }
    count2 = 32 - count1;

    printf("Number of 1s in the binary representation: %d\n", count1);
    printf("Number of 0s in the binary representation: %d",count2);

    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH ERROR

TERMINAL

```
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s4q2
Enter a number: 80
Number of 1s in the binary representation: 2
Number of 0s in the binary representation: 30
PS C:\UNI ASSIGNMENT\pflab\lab5>
```

Section 5

QNO.1 Write a program that checks if a year is a leap year using the modulus operator.

PFlab > lab5 > C lab5s5q1.c > main()

```c
#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;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH ERROR

TERMINAL

```
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s5q1
Enter a year: 2024
2024 is a leap year.
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s5q1
Enter a year: 1900
1900 is not a leap year.
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s5q1
Enter a year: 1600
1600 is a leap year.
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s5q1
Enter a year: 1700
1700 is not a leap year.
PS C:\UNI ASSIGNMENT\pflab\lab5>
```

QNO.2 Create a program that calculates the sum of digits of a number until the result is a single digit.

PFlab > lab5 > C lab5s5q2.c > main(void)

```c
#include<stdio.h>
int main(void)
{
    int sum = 0, num, remainder;
    printf("Enter the number:");
    scanf("%d",&num);
    while (num != 0)
    {
        remainder = num % 10;
        sum = sum + remainder;
        num = num / 10;
    }
    printf("The sum of the digit is:%d",sum);
    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH ERROR

TERMINAL

```
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s5q2
Enter the number:365
The sum of the digit is:14
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5s5q2
Enter the number:12345678
The sum of the digit is:36
PS C:\UNI ASSIGNMENT\pflab\lab5>
```

Problems:

QNO.1 Write a program to find the greatest of three numbers using nested if-else statements.

PFlab > lab5 > C lab5p1.c > main(void)

```c
#include<stdio.h>
int main(void)
{
    int num1, num2, num3;
    printf("Enter the Number one: ");
    scanf("%d",&num1);
    printf("Enter the Number two: ");
    scanf("%d",&num2);
    printf("Enter the Number three: ");
    scanf("%d",&num3);
    if(num1 > num2)
    {
        if(num1 > num3)
        {
            printf("Number one is the greatest %d",num1);
        }
        else if(num2 > num3)
        {
            printf("Number two is the greatest %d",num2);
        }
    }
    else {
        printf("Number three is the greatest %d",num3);
    }
    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH ERROR

TERMINAL

```
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5p1
Enter the Number one: 7
Enter the Number two: 5
Enter the Number three: 6
Number one is the greatest 7
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5p1
Enter the Number one: 5
Enter the Number two: 6
Enter the Number three: 7
Number three is the greatest 7
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5p1
Enter the Number one: 6
Enter the Number two: -1
Enter the Number three: -1
Number one is the greatest 6
```

QNO.2 Create a program that calculates the final grade of a student based on multiple criteria, including attendance, assignment scores, and exam results, using nested decision structures.

PFlab > lab5 > C lab5p2.c > main(void)

```c
#include<stdio.h>
int main(void)
{
    int attend, assign_scores, results, paper_marks;
    printf("Enter the attendance: ");
    scanf("%d",&attend);
    printf("Enter the assignment scores: ");
    scanf("%d",&assign_scores);
    printf("Enter paper marks: ");
    scanf("%d",&paper_marks);
    results = assign_scores + paper_marks;
    if(results >= 50 && results <= 100)
    {
        if(results >=50 && results <=60)
        printf("YOU ACHIEVE D GRADE");
        if(results > 60 && results <= 75)
        {
            printf("YOU ACHIEVED C GRADE");
        }
        else if(results > 75 && results <= 85)
        {
            printf("YOU ACHIEVED B GRADE");
        }
        else if(results > 85 && results <= 90)
        {
            printf("YOU ACHIEVED A GRADE");
        }
        else if(results > 90 && results <= 100)
        {
            printf("YOU ACHIEVED A* GRADE");
        }
        else {
            printf("RETRY");
        }
    }
    else {
        printf("Invalid info");
    }
    if(attend >= 75)
    {
        printf("\nYour attendance is complete");
    }
    else {
        printf("\nYour attendance is incomplete");
    }
    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH ERROR

TERMINAL

```
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5p2
Enter the attendance: 75
Enter the assignment scores: 43
Enter paper marks: 32
YOU ACHIEVED C GRADE
Your attendance is complete
PS C:\UNI ASSIGNMENT\pflab\lab5>
```

QNO.3 Write a program that uses bitwise operators to perform encryption and decryption of a character.

PFlab > lab5 > C lab5p3.c > main(void)

```c
#include<stdio.h>
int main(void)
{
    char character, encrypt_char, decrypt_char;
    int key;
    printf("Enter the character to encrypt: ");
    scanf(" %c",&character);
    printf("Enter the key: ");
    scanf("%d",&key);
    encrypt_char = character ^ key;
    printf("The encrypted character is: %c\n",encrypt_char);
    decrypt_char = encrypt_char ^ key;
    printf("The decrypted character is: %c",decrypt_char);

    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH ERROR

TERMINAL

```
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5p3
Enter the character to encrypt: t
Enter the key: 7
The encrypted character is: s
The decrypted character is: t
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5p3
Enter the character to encrypt: R
Enter the key: 10
The encrypted character is: X
The decrypted character is: R
PS C:\UNI ASSIGNMENT\pflab\lab5>
```

QNO.4 Develop a program that uses logical operators to determine if a person is eligible for a loan based on age, income, and credit score.

PFlab > lab5 > C lab5p4.c > main(void)

```c
#include<stdio.h>
int main(void)
{
    int age, credit_score;
    float income;
    printf("Enter the age: ");
    scanf("%d",&age);
    printf("Enteer the credit score: ");
    scanf("%d",&credit_score);
    printf("Enter your income: ");
    scanf("%f",&income);
    if((age >= 18 && age <=100) && (income <= 50000) && (credit_score >= 580 && credit_score <=850))
    {
        printf("You are eligible for the loan.");
    }
    else {
        printf("You are not eligible for the loan.");
    }
    return 0;
}
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL SEARCH ERROR

TERMINAL

```
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5p4
Enter the age: 19
Enteer the credit score: 581
Enter your income: 40000
You are eligible for the loan.
PS C:\UNI ASSIGNMENT\pflab\lab5> .\lab5p4
Enter the age: 18
Enteer the credit score: 840
Enter your income: 90000
You are not eligible for the loan.
PS C:\UNI ASSIGNMENT\pflab\lab5>
```

Do you want t
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