Github Link: https://github.com/Abd-ur-rehman02/PF-Lab-spring-2026

Task 1: Student Attendance Eligibility

Scenario

A university allows students to sit in exams only if attendance is 75% or above.

Requirements

- **Input: attendance percentage**
- **Attendance ≥ 75 → Eligible for Exam**
- **Else → Not Eligible for Exam**

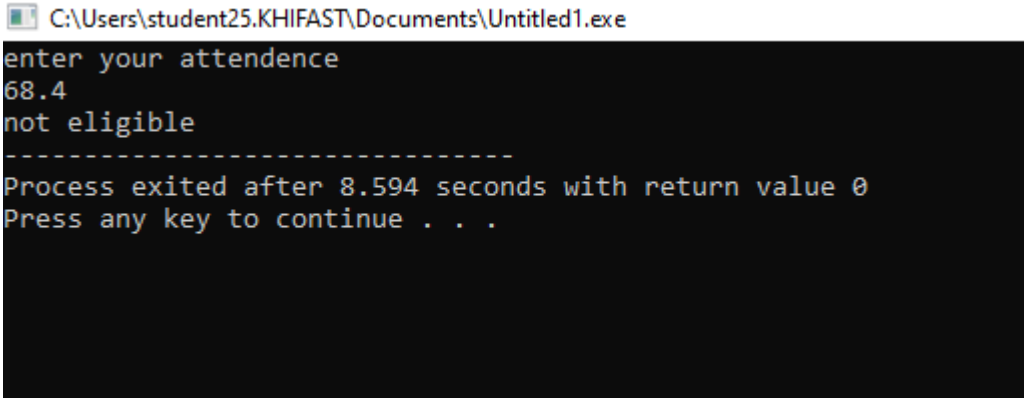
Concept Used

if – else

```
#include <stdio.h>
int main(){
	float attendence;
	printf("enter your attendance\n");
	scanf("%f",&attendence);
	if(attendence>=75){

		printf("eligible for exam");

	}else{
		printf("not eligible");
	}
```

return 0;

}


C:\Users\student25.KHIFAST\Documents\Untitled1.exe
enter your attendence
68.4
not eligible

Process exited after 8.594 seconds with return value 0
Press any key to continue . . .

Task 2: Electricity Bill Usage Checker

Scenario

An electricity company classifies users based on electricity consumption.

Requirements

• Input: total units consumed

• Conditions:

➢ Units ≤ 100 → Low Usage

➢ Units 101–300 → Medium Usage

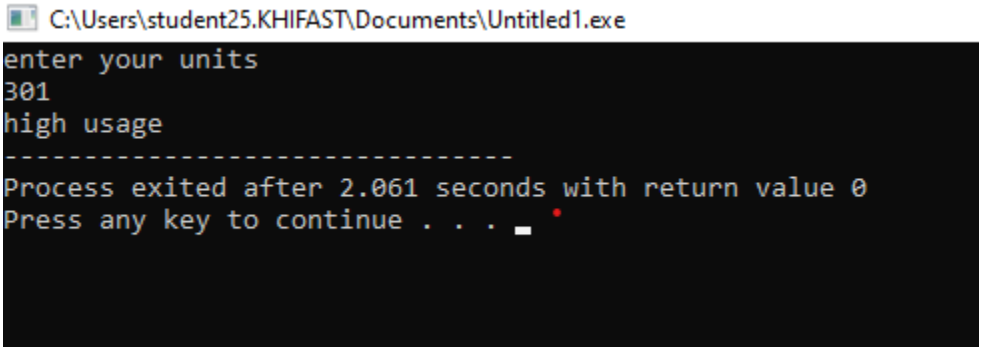
➢ Units > 300 → High Usage

Concept Used

if – else if – else

```
#include <stdio.h>
int main(){
        float units;
        printf("enter your units\n");
        scanf("%f",&units);
        if (units<=100){

                printf("low usage");
```

```
        }else if (units >= 100 && units <=300){
                printf("mid usage");
        }
        else{
                printf("high usage");
        }


return 0;
}
```



Task 3: Number Classification System

Scenario

A number analysis system determines the type of number entered by the user.

Requirements

• Input: an integer

• Number > 0 → Positive

• Number < 0 → Negative

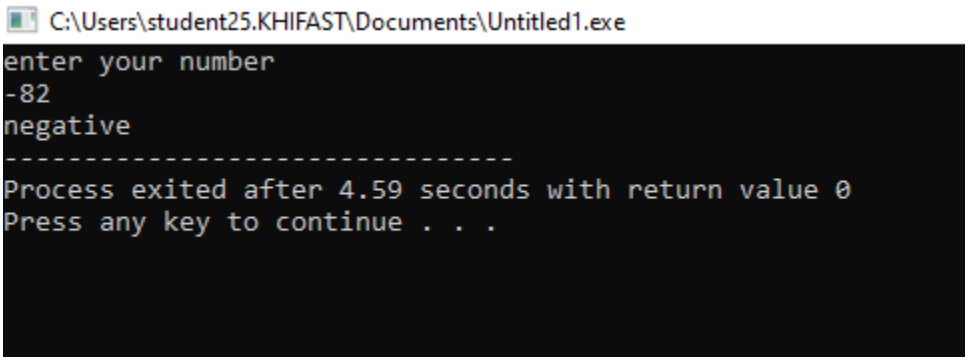
• Number = 0 → Zero

Concept Used

if – else if – else

```
#include <stdio.h>
int main(){
	int number;
	printf("enter your number\n");
	scanf("%f",&number);
	if (number < 0){

		printf("negative");

	}else if (number >= 1){
		printf("positive");
```

```
        }
        else {
                printf("number is zero");
        }


return 0;}
```



Task 4: Login Authentication System

Scenario

A simple login system verifies user credentials.

Requirements

• Predefined credentials:

➢ Username: admin

➢ Password: 1234

• Input username and password

• If both match → Login Successful

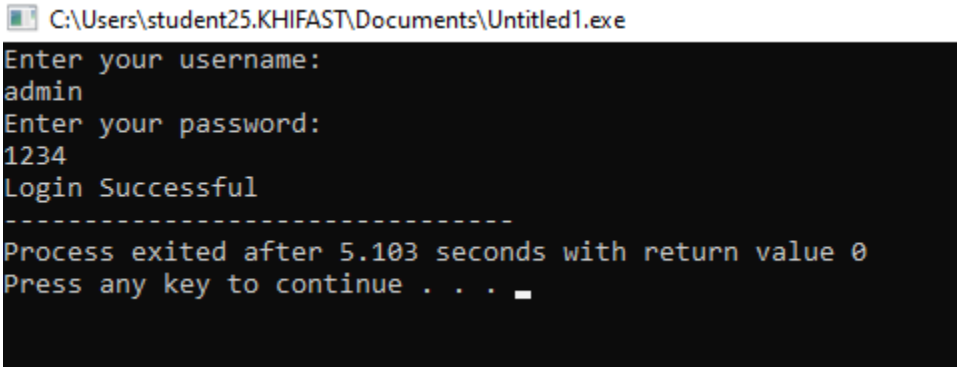
• Else → Invalid Credentials

Concept Used

Logical operators (&&) with if – else

```
#include <stdio.h>
#include <string.h>

int main() {
    char username[10];
    int password;

    printf("Enter your username:\n");
```

```
    scanf("%s", username);

    printf("Enter your password:\n");
    scanf("%d", &password);

    if (username[0] == 'a' &&
        username[1] == 'd' &&
        username[2] == 'm' &&
        username[3] == 'i' &&
        username[4] == 'n' &&
        username[5] == '\0' &&
        password == 1234) {

        printf("Login Successful");
    } else {
        printf("Invalid Credentials");
    }

    return 0;
}
```


C:\Users\student25.KHIFAST\Documents\Untitled1.exe
Enter your username:
admin
Enter your password:
1234
Login Successful

Process exited after 5.103 seconds with return value 0
Press any key to continue . . .

Task 5: ATM Menu System

Scenario

An ATM machine allows users to select different services.

Menu

1. Balance Inquiry

2. Cash Withdrawal

3. Deposit

4. Exit

Requirements

• Input user choice

• Use switch to display relevant message

• Handle invalid choice using default

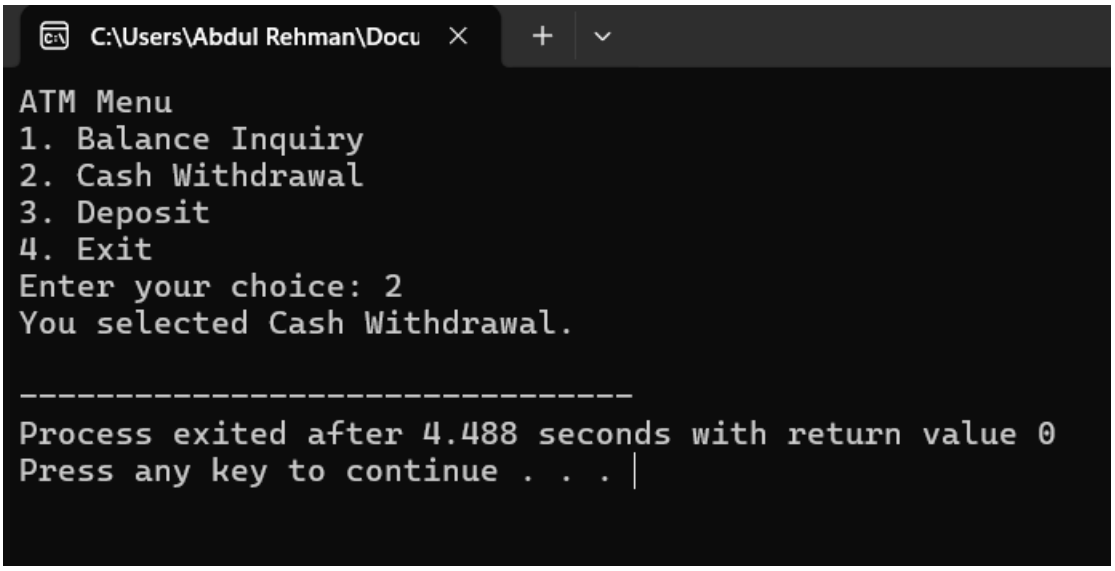
Concept Used

switch statement

```
#include <stdio.h>

int main() {
    int choice;

    printf("ATM Menu\n");
```

```
printf("1. Balance Inquiry\n");
printf("2. Cash Withdrawal\n");
printf("3. Deposit\n");
printf("4. Exit\n");

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

switch (choice) {
   case 1:
      printf("You selected Balance Inquiry.\n");
      break;

   case 2:
      printf("You selected Cash Withdrawal.\n");
      break;

   case 3:
      printf("You selected Deposit.\n");
      break;

   case 4:
      printf("Thank you for using the ATM. Goodbye!\n");
      break;
```

```
        default:
            printf("Invalid choice. Please try again.\n");
    }

    return 0;
}
```



Task 6: Grade Evaluation System

Scenario

A grading system assigns grades based on marks obtained.

Requirements

• Input marks (0–100) => (any 5 subjects marks)

• percentage ≥ 85 → Grade A

• percentage ≥ 70 → Grade B

• percentage ≥ 50 → Grade C

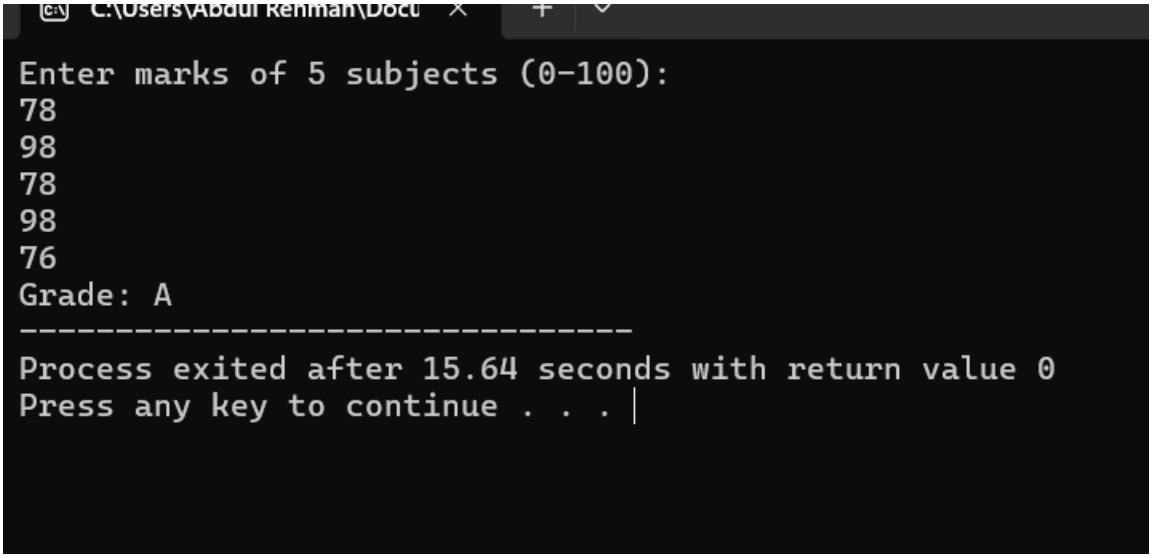
• percentage < 50 → Fail

Concept Used

if – else if – else

```
#include <stdio.h>

int main() {
    int s1, s2, s3, s4, s5;
    float total, percentage;

    printf("Enter marks of 5 subjects (0-100):\n");
    scanf("%d %d %d %d %d", &s1, &s2, &s3, &s4, &s5);
```

```
    total = s1 + s2 + s3 + s4 + s5;
    percentage = (total / 500) * 100;

    if (percentage >= 85) {
        printf("Grade: A");
    }
    else if (percentage >= 70) {
        printf("Grade: B");
    }
    else if (percentage >= 50) {
        printf("Grade: C");
    }
    else {
        printf("Fail");
    }

    return 0;
}
```



Task 7: Discount Calculator

Scenario

A shopping store offers discounts based on total purchase amount.

Requirements

• Input total bill amount

• ≥ 5000 → 20% discount

• ≥ 3000 → 10% discount

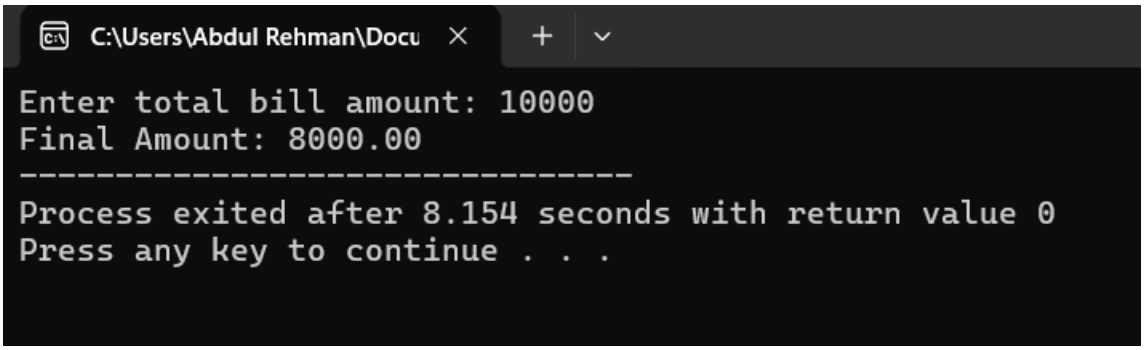
• < 3000 → No discount

Concept Used

if – else if – else

```
#include <stdio.h>

int main() {
    float bill, discount, finalAmount;
```

```
    printf("Enter total bill amount: ");
    scanf("%f", &bill);

    if (bill >= 5000) {
        discount = bill * 0.20;
    }
    else if (bill >= 3000) {
        discount = bill * 0.10;
    }
    else {
        discount = 0;
    }

    finalAmount = bill - discount;

    printf("Final Amount: %.2f", finalAmount);

    return 0;
}
```



Task 8: Scientific Calculator Using Switch

Scenario

A scientific calculator performs arithmetic and basic scientific operations based on user

selection.

Menu

1. Addition

2. Subtraction

3. Multiplication

4. Division

5. Square of a number

6. Cube of a number

7. Square Root of a number

8. Power (xy)

9. Absolute Value

Requirements

• Display menu

• Input user choice

• Use switch statement

Input Rules

• Options 1–4 and 8 → input two numbers

• Options 5–7 and 9 → input one number

Validations

• Handle division by zero

• Handle square root of negative number

• Handle invalid menu choice using default

Concept Used

• switch

• if (validation)

• Relational and logical operators

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

int main() {
    int choice;
    float a, b;

    printf("1. Addition\n");
    printf("2. Subtraction\n");
```

```
printf("3. Multiplication\n");
printf("4. Division\n");
printf("5. Square of a number\n");
printf("6. Cube of a number\n");
printf("7. Square Root of a number\n");
printf("8. Power (x^y)\n");
printf("9. Absolute Value\n");

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

switch (choice) {

   case 1:
      scanf("%f %f", &a, &b);
      printf("Result: %.2f", a + b);
      break;

   case 2:
      scanf("%f %f", &a, &b);
      printf("Result: %.2f", a - b);
      break;

   case 3:
```

```
    scanf("%f %f", &a, &b);
    printf("Result: %.2f", a * b);
    break;

case 4:
    scanf("%f %f", &a, &b);
    if (b != 0)
        printf("Result: %.2f", a / b);
    else
        printf("Error: Division by zero");
    break;

case 5:
    scanf("%f", &a);
    printf("Result: %.2f", a * a);
    break;

case 6:
    scanf("%f", &a);
    printf("Result: %.2f", a * a * a);
    break;

case 7:
    scanf("%f", &a);
```

```
            if (a >= 0)
                printf("Result: %.2f", sqrt(a));
            else
                printf("Error: Negative number");
            break;

        case 8:
            scanf("%f %f", &a, &b);
            printf("Result: %.2f", pow(a, b));
            break;

        case 9:
            scanf("%f", &a);
            printf("Result: %.2f", fabs(a));
            break;

        default:
            printf("Invalid choice");
    }

    return 0;
}
```

```
1. Addition
2. Subtraction
3. Multiplication
4. Division
5. Square of a number
6. Cube of a number
7. Square Root of a number
8. Power (x^y)
9. Absolute Value
Enter your choice: 8
4
4
Result: 256.00
--------------------------------
Process exited after 14.14 seconds with return value 0
Press any key to continue . . .
```