Homework 02

Submission rules:

- Write the code for questions 1 to 5 in a single C file named *"name_studentID_homework01.c"*. For example: *"arya_010203_homework01.c"*.
- Use printf statements to clearly separate each question's code. For example:

```
printf("*****-----Question 1-----*****\n");
// Code for Question 1
```

- Provide comments for each line of code to explain its purpose or functionality. For example:

```
// Calculate the number of each denomination
int note100k = amount / 100000;
```

- Ensure the code and comments are original, avoiding direct copying from external sources. If two or more students have the same code and comments, the score will be divided equally.
- Example:

arya_010203_homework01.c

```c
#include <stdio.h>
#include <stdlib.h>

int main()
{
    printf("Question 1\n");

    // PUT YOUR CODE HERE

    printf("Question 2\n");

    // PUT YOUR CODE HERE

    printf("Question 3\n");
    //...
    //...
    //...
    //...
    //...
    printf("Question 5\n");

    return 0;
}
```

Question 1:

Create a C program that prompts the user to input a positive integer and then checks whether the number is a palindrome or not. A palindrome number remains the same when its digits are reversed.

Example:

```
Enter a number: 12321
12321 is a palindrome number.

Enter a number: 45678
45678 is not a palindrome number.
```

Question 2:

Create a C program that prompts the user to enter a string and then counts the number of vowels (a, e, i, o, u) in that string.

Example:

```
Enter a string: Hello World
Number of vowels in the string: 3
```

Question 3:

Develop a C program that generates a Fibonacci sequence up to a specified term. Prompt the user to enter the number of terms they want to generate in the Fibonacci sequence and then print the sequence accordingly.

Example:

```
Enter the number of terms: 8
Fibonacci sequence:
0 1 1 2 3 5 8 13
```

Question 4:

Write a C program to implement a simple calculator that can perform addition, subtraction, multiplication, and division. The program should prompt the user to input two numbers and an operator (+, -, *, /), and then perform the corresponding operation.

Example:

```
Enter the first number: 10
Enter the second number: 5
Enter the operator (+, -, *, /): *
Result: 10 * 5 = 50
```

Question 5:

Develop a C program that simulates a simple ATM (Automated Teller Machine) transaction. The program should prompt the user to input their PIN (Personal Identification Number) and then provide a menu of options such as:

Check Balance
Deposit
Withdraw
Change PIN
Exit

Based on the user's selection, the program should perform the corresponding action and display appropriate messages. Implement error handling for incorrect PIN entries and invalid menu choices.

Example:

```
Welcome to Simple ATM
Enter your PIN: 1234

   1. Check Balance
   2. Deposit
   3. Withdraw
   4. Change PIN
   5. Exit
Enter your choice: 1
Your current balance is $1000.

Enter your choice: 2
Enter the amount to deposit: 500
$500 deposited successfully. Your new balance is $1500.

Enter your choice: 3
Enter the amount to withdraw: 700
$700 withdrawn successfully. Your new balance is $800.

Enter your choice: 4
Enter your new PIN: 5678
PIN changed successfully.

Enter your choice: 5
Thank you for using Simple ATM. Goodbye!
```