# Complex engineering problem

# Assignment # 5

**EE-112 - Programming Fundamentals**

**by**


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**Section: A**

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PROBLEM STATEMENT

Automatic Teller Machines are used along-with virtual private network-based communication between centralized banking system and client; to facilitate the clients with various activities. Using the knowledge of C Programming, design a user interface that uses card-less mechanism to facilitate the user in various banking related activities (some listed here).

ASPECTS FOR ANALYSIS AND DESIGN

i. The module is unlike traditional ATM machine that uses data of user in card so mechanism should be devised to overcome this issue.

ii. Data, when entered, should be encrypted and stored in encrypted manner as well so that any theft of data doesn't directly make the intruder to access sensitive information.

CONSTRAINS

i. The developer will use C Programming technique

ii. The interface used for interaction with clients is a console screen that much be user friendly.

iii. Banking requires secure data input, storage and retrieval so the checksum mechanism and entry verification plays a key role.

iv. Hard saving and retrieval are required as the RAM refreshes each time the program stops its execution on PC.

v. Single user access is required with record of multiple clients on system. This may include transfers within accounts and its validation

[CLO-2, PLO-1, Cognitive Level-1] [CLO-3, PLO-2, Cognitive Level-4]

1. Apply the knowledge of Programming Fundamentals to analysis the problem statement and list all the facilities an ATM delivers

2. Reduce the list to an achievable task list that can be performed efficiently using C Programming Language.

3. Draw the flowchart of the task and name each process in such a manner that a non-technical person can easily interpret it

4. Write the Pseudocode of the whole process stated in (3).

5. Write the C Program with basic component to achieve the list of facilities as in (2) and in then loop the program for continuous usage,

6. Show the output in assignment for various processes and write the github link in the submission for revisiting your code.

S# Attribute Present in the Problem Justification

1. Preamble Yes The complex engineering problem requires in depth knowledge related to Computer Programming and fundamentals

2. Range of conflicting requirements: Yes Both C Language an everyday life knowledge is required whereas the programmer is constrained to use limited options from C language

3. Depth of Analysis required: Yes Basic tools of programming need to be used for designing ATM system so in-depth analysis of each C term and ATM is required

4. Depth of knowledge required: Yes The problem requires in-depth engineering knowledge about the mentioned area.

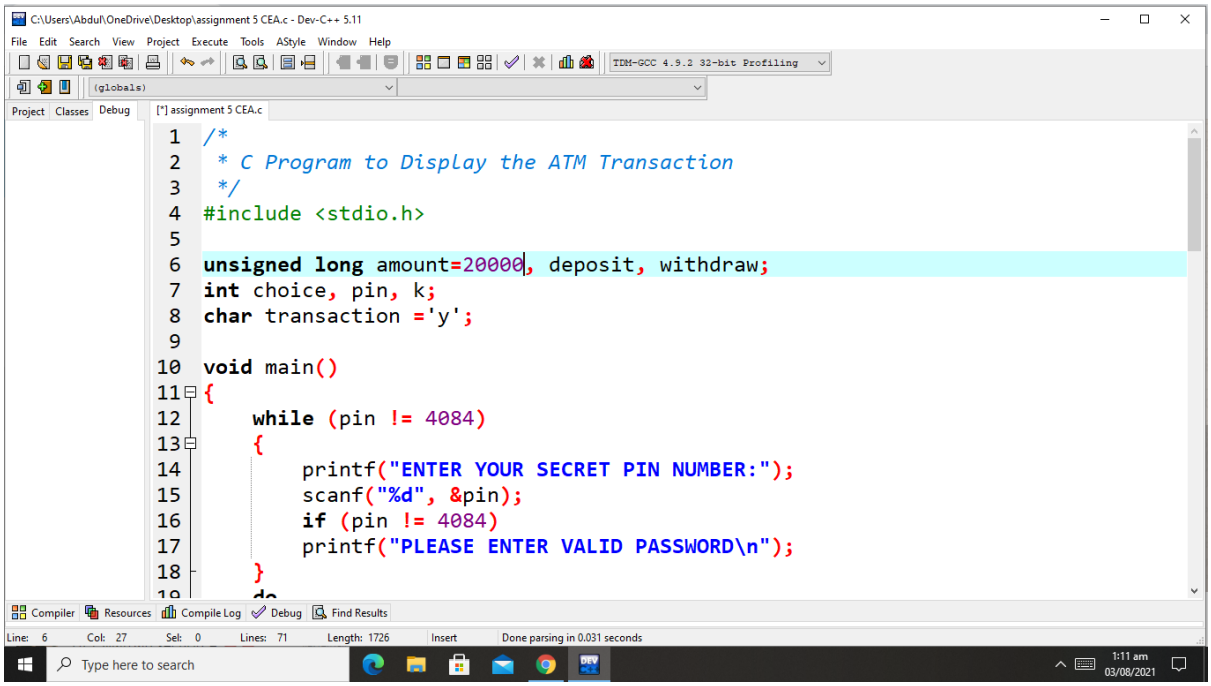
5. Familiarity of issues: Yes Programmer is familiar with basic steps and its first experience of them to work with C and tackle such real-world problem

6. Extent of applicable codes: Yes The code is reusable in many different ways related to accessing hard drive data, arrays of information, encryption and authentication, code to be kept in Github

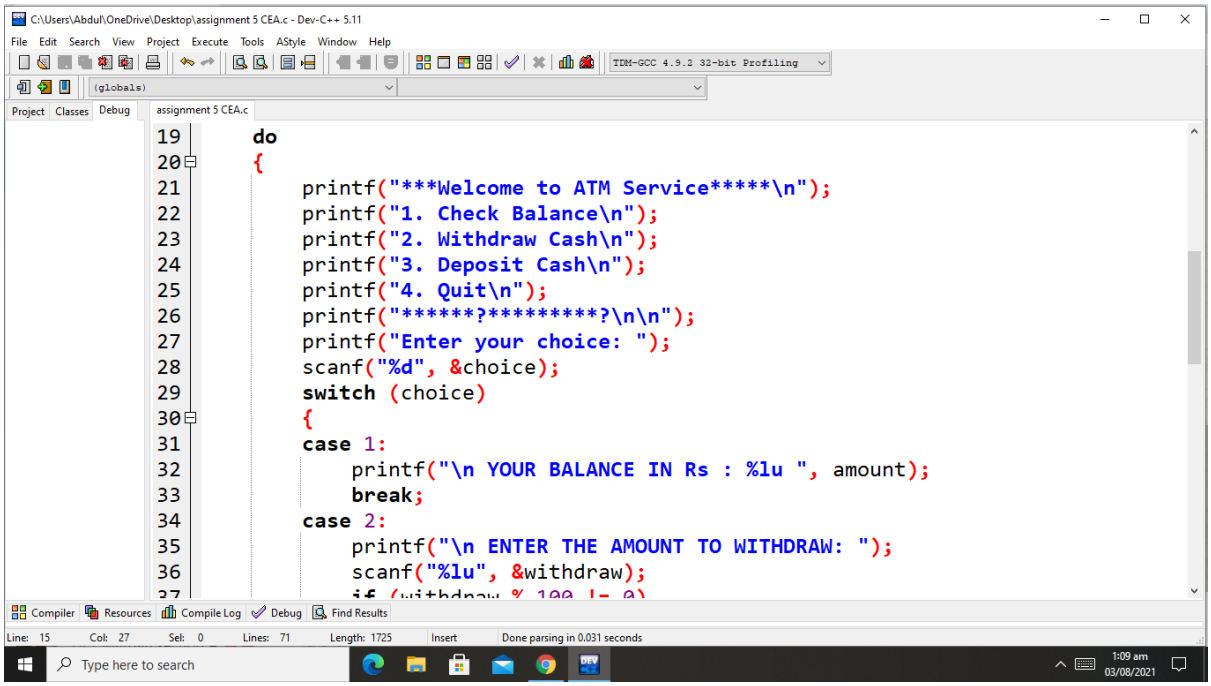
7. Extent of stakeholder Involved: Yes Modern banking system requires such solutions and development is carried out each day. Such problem solving will make the students to get familiar and indulge with banking system

8. Consequences: No N/A

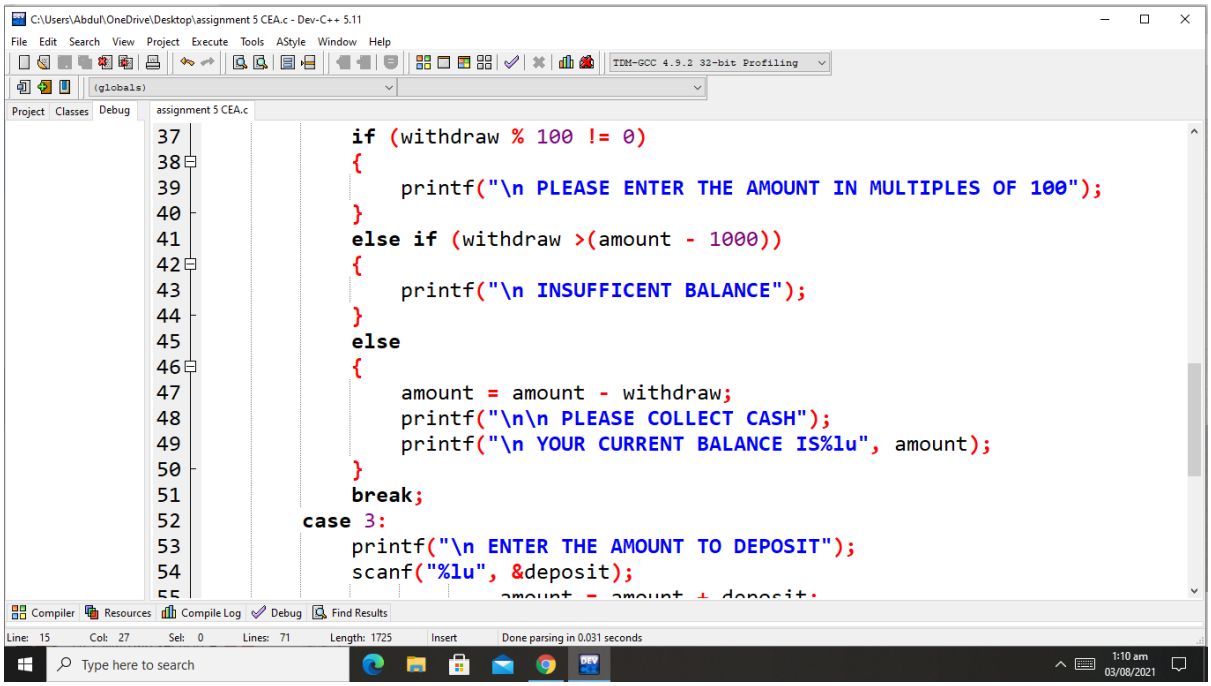
9. Interdependence: Yes Basic tools of programming need to be used for designing ATM system so in-dept analysis of each C language term and ATM is required.



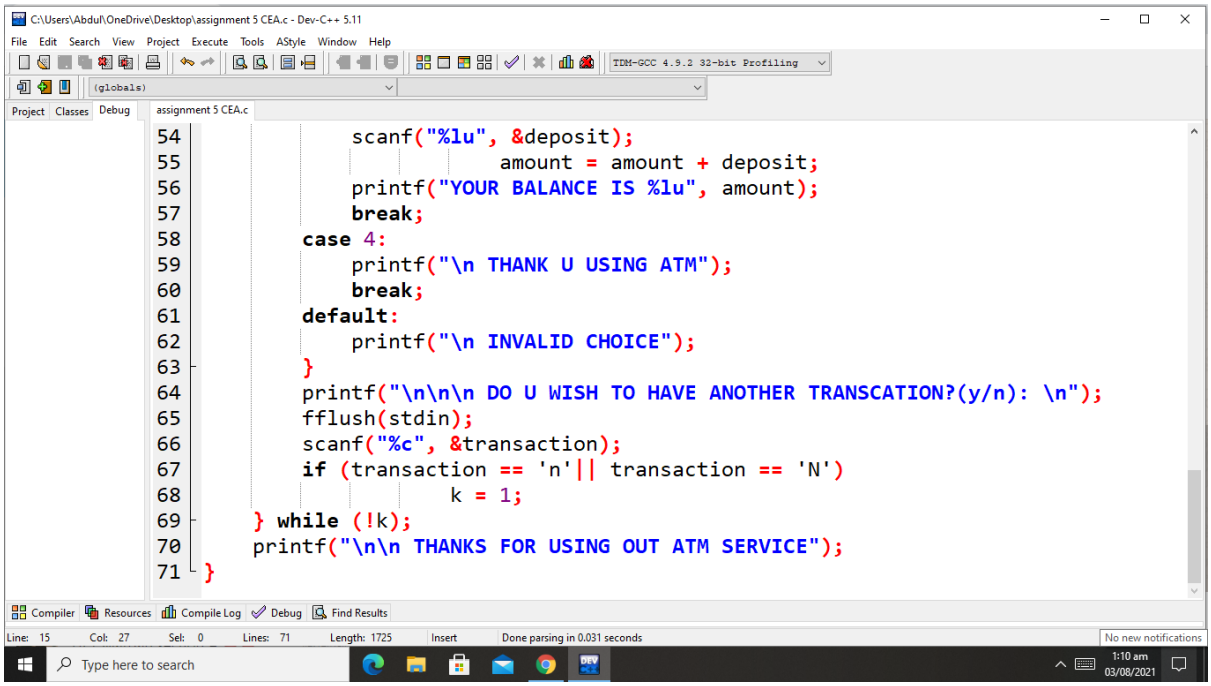
```c
/*
 * C Program to Display the ATM Transaction
 */
#include <stdio.h>

unsigned long amount=20000, deposit, withdraw;
int choice, pin, k;
char transaction ='y';

void main()
{
    while (pin != 4084)
    {
        printf("ENTER YOUR SECRET PIN NUMBER:");
        scanf("%d", &pin);
        if (pin != 4084)
        printf("PLEASE ENTER VALID PASSWORD\n");
    }
```



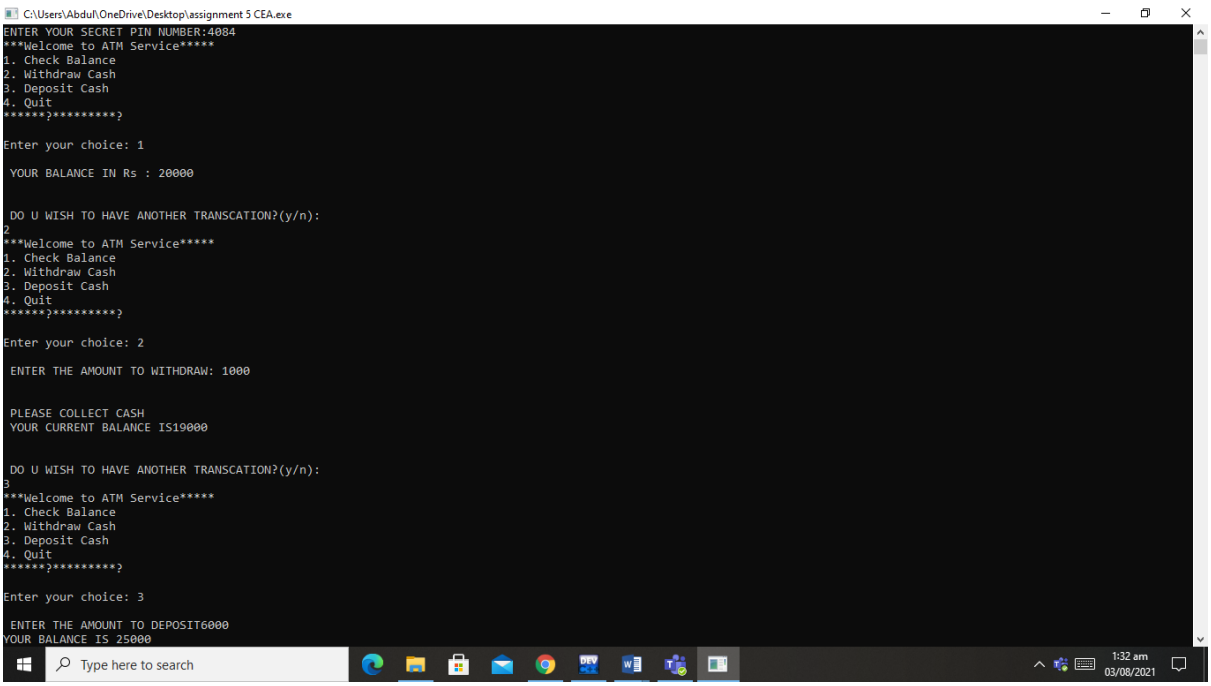
```c
    do
    {
        printf("***Welcome to ATM Service*****\n");
        printf("1. Check Balance\n");
        printf("2. Withdraw Cash\n");
        printf("3. Deposit Cash\n");
        printf("4. Quit\n");
        printf("******?*********?\n\n");
        printf("Enter your choice: ");
        scanf("%d", &choice);
        switch (choice)
        {
        case 1:
            printf("\n YOUR BALANCE IN Rs : %lu ", amount);
            break;
        case 2:
            printf("\n ENTER THE AMOUNT TO WITHDRAW: ");
            scanf("%lu", &withdraw);
```

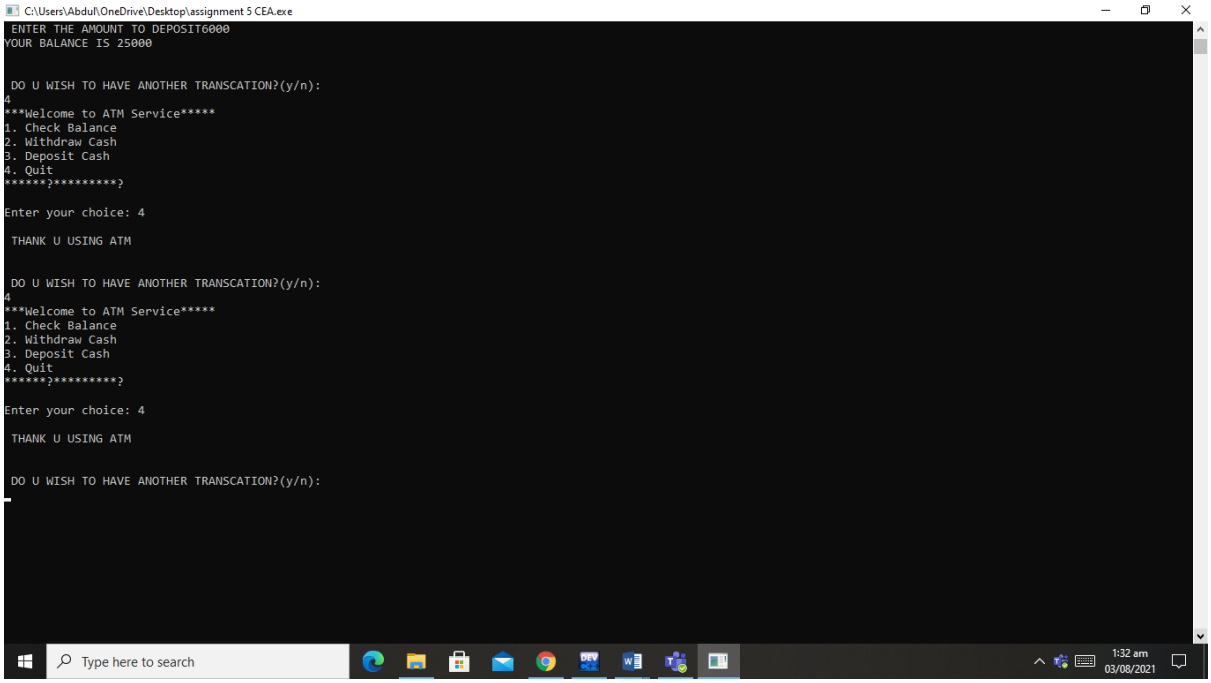


```
            if (withdraw % 100 != 0)
            {
                printf("\n PLEASE ENTER THE AMOUNT IN MULTIPLES OF 100");
            }
            else if (withdraw >(amount - 1000))
            {
                printf("\n INSUFFICENT BALANCE");
            }
            else
            {
                amount = amount - withdraw;
                printf("\n\n PLEASE COLLECT CASH");
                printf("\n YOUR CURRENT BALANCE IS%lu", amount);
            }
            break;
        case 3:
            printf("\n ENTER THE AMOUNT TO DEPOSIT");
            scanf("%lu", &deposit);
```



```
            scanf("%lu", &deposit);
                    amount = amount + deposit;
            printf("YOUR BALANCE IS %lu", amount);
            break;
        case 4:
            printf("\n THANK U USING ATM");
            break;
        default:
            printf("\n INVALID CHOICE");
        }
        printf("\n\n\n DO U WISH TO HAVE ANOTHER TRANSCATION?(y/n): \n");
        fflush(stdin);
        scanf("%c", &transaction);
        if (transaction == 'n'|| transaction == 'N')
                k = 1;
    } while (!k);
    printf("\n\n THANKS FOR USING OUT ATM SERVICE");
}
```


C:\Users\Abdul\OneDrive\Desktop\assignment 5 CEA.exe
ENTER YOUR SECRET PIN NUMBER:4084
***Welcome to ATM Service*****
1. Check Balance
2. Withdraw Cash
3. Deposit Cash
4. Quit
******)*********?
Enter your choice: 1
YOUR BALANCE IN Rs : 20000
DO U WISH TO HAVE ANOTHER TRANSCATION?(y/n):
2
***Welcome to ATM Service*****
1. Check Balance
2. Withdraw Cash
3. Deposit Cash
4. Quit
******)*********?
Enter your choice: 2
ENTER THE AMOUNT TO WITHDRAW: 1000
PLEASE COLLECT CASH
YOUR CURRENT BALANCE IS19000
DO U WISH TO HAVE ANOTHER TRANSCATION?(y/n):
3
***Welcome to ATM Service*****
1. Check Balance
2. Withdraw Cash
3. Deposit Cash
4. Quit
******)*********?
Enter your choice: 3
ENTER THE AMOUNT TO DEPOSIT6000
YOUR BALANCE IS 25000
Type here to search
1:32 am
03/08/2021


C:\Users\Abdul\OneDrive\Desktop\assignment 5 CEA.exe
ENTER THE AMOUNT TO DEPOSIT6000
YOUR BALANCE IS 25000
DO U WISH TO HAVE ANOTHER TRANSCATION?(y/n):
4
***Welcome to ATM Service*****
1. Check Balance
2. Withdraw Cash
3. Deposit Cash
4. Quit
******?*********?
Enter your choice: 4
THANK U USING ATM
DO U WISH TO HAVE ANOTHER TRANSCATION?(y/n):
4
***Welcome to ATM Service*****
1. Check Balance
2. Withdraw Cash
3. Deposit Cash
4. Quit
******?*********?
Enter your choice: 4
THANK U USING ATM
DO U WISH TO HAVE ANOTHER TRANSCATION?(y/n):
Type here to search
1:32 am
03/08/2021