

TU856/1, TU857/1 & TU858/1 Programming Assignment #1

Submission Deadline: **Sunday, November 20th, 2022 (23.59 GMT)**

Requirements:

You are required to develop a C program to enable bank customers to manage their Personal Identification Number (PIN) on an Automated Teller Machine (ATM). The PIN is any 4-digit number. You can assume that the customer's default PIN has been initially assigned the number: **1234**

Your program should be menu-driven and must display a simple menu when run. The menu should display the following options:

1. Enter PIN and verify correct
2. Change PIN
3. Display the number of times the PIN was entered (i) Successfully (ii) Incorrectly
4. Exit Program

Features to include:

1. When the program is running, the customer should be asked to select an option from the menu above. After selecting an option, your program must do the following:
 - If they select option 1, they should be asked to enter their PIN. Your program must then verify and indicate whether the PIN entered is correct or incorrect.
 - If they select option 2, they should be allowed to change their PIN. When they enter the new PIN, your program must verify the new PIN by asking the customer to re-enter this new PIN. If there are any differences and the verification fails, your program must display an appropriate error message and the original PIN should remain the same.
 - If they select option 3, your program should show the number of times the PIN was entered **both** correctly and incorrectly.
 - If they select option 4, your program should terminate gracefully, i.e., end.
2. Your program should continually run and re-display the main menu after each option has completed, i.e. start over again. Only when the customer enters option 4 (i.e. Exit program option), should your program terminate.
3. The program **should** take account of input errors by the user and display appropriate error messages.

Submission details:

1. Submission file name: **assignment1.c**
2. Submit your assignment1.c file on Brightspace. This must be submitted on or before **Sunday, November 20th, 2022 (23.59 GMT)**.

Late submissions: Late submissions will incur a progressive penalty of 10% each day late, i.e., 1 day late = 10% deduction, 2 days late = 20% deduction, etc.,

No submissions accepted after 1 week and a zero-mark awarded.

NB - This is an individual assignment and **NOT** a group one. Do your own work and do not plagiarise your code. Anti-plagiarism software will be used to randomly check submissions. Any submitted code suspected of having been plagiarised will be brought to the attention of the module examiners for specialised checks under the TU Dublin general assessment regulations.

See marking scheme (rubric) below.

Marking scheme (Rubric):

Table 1 shows the marks allocated for this assignment.

Functionality (Requirements). Code should meet the highest professional standards	Option 1 (PIN entry: entered correctly and verified)	15%	
	Option 2 (PIN change correctly)	15%	
	Option 3 (Display number of times PIN entered correctly & incorrectly)	30%	
	Option 4 (Program ends, i.e. , graceful termination)	5%	
Error checking (Validation) Validate all program input, etc.,		15%	
		Sub Total:	80%
Commenting	Program Description, Author, Date	5%	
	Good comments throughout code body	10%	
Indentation	Correct <u>and</u> consistent indentation throughout code body	5%	
		Sub Total:	20%

Table 1: Marking scheme (Rubric)