**Project 1**

CSCI 140

C++ Language and Object Development

**MAI PHAM**

Email – [mpham30@student.mtsac.edu](mailto:mpham30@student.mtsac.edu)

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**Development Environment**

MSVS 2012/2015

**Table of Contents**

1. Project Note
2. Pseudocode
3. Input/output
4. Source code (Vending Machine Version 1A.cpp)

PROJECT NOTE

Project 1 is to create a vending machine that take in and return money for the customers purchased. This project is longer than I thought it would. At the beginning, I started with the pseudocode to create an outline of my program. However, when I started the coding, I realized the calculation part is little bit trickier compare to my pseudocode where I just had a simple math calculation. My original code couldn’t handle the situation when we need to end the transaction due to insufficient change. To solve it, I added a few new variables to my calculation and an if/else statement.

For the extra credit, I did extra credit 1. I chose to use an if/else statement instead of switch statement for the menu. The reason is because since it is only 2 options (1 for dollar and 2 for coins); I think it is not really necessary to use a menu switch statement. An if/else statement would be much easier and simpler to read. The extra credit, like the calculation in the original project, does require some critical thinking. I got stuck in 2 parts. The first one is I need to find a way to input different amount of coins in any order and able to keep track of it. If the input amount is not enough, I need to return and reset the insert amount. The 2nd part I had a problem with is how to repeat the process without display “Please insert your coins” over and over again. Turn out, in order for the extra credit to work, it required nested loops and if/else statements.

Finally, I spent some time to organize and created functions so the source code is more readable. Overall, I am happy with my project that both the original and the extra credit 1 are working well.

PSEUDOCODE

Int quarters, dimes, nickels, balance, purchasedAmount, change

Int quartersChange, dimesChange, nickelsChange

Display “Vending Machine Version 1 by Mai Pham”

Display “Fill up the machine with changes. Please wait…”

Display “Enter number of quarters, dimes, and nickels🡪”

Input quarters,

Input dimes,

Input nickels

Display “There are” + quarters + “quarters,” + dimes + “dimes,” + nickels + “nickels.”

Balance = (quarters \* 25) + (dimes \* 10) + (nickels \*5)

Balance = balance/100

Display “Initial machine balance is” + balance

Display “Only one-dollar bill will be accepted.”

Display “Only amount between 0 to 100 and multiple of 5 is accepted.”

Display “Machine is now ready.”

Display “Enter a purchase amount [0 to 100]”

Input purchasedAmount

While (purchasedAmount != 0)

{

While (purchasedAmount < 0 || purchasedAmount > 100 || purchasedAmount % 5 != 0)

{

If (purchasedAmount < 0 || purchasedAmount > 100)

{

Display “Invalid amount (outside valid range). Try again.”

Display “Enter a purchase amount [0 to 100]”

Input purchasedAmount

}

Else

{

Display “Invalid amount (not a multiple 5). Try again.”

Display “Enter a purchase amount [0 to 100]”

Input purchasedAmount

}

}

If (purchasedAmount == 0)

Break

Display “You entered a purchase amount of” + purchasedAmount + “cents.”

Display “Please insert one-dollar bill.”

Display “Processing your purchase…”

Change = 100 – purchasedAmount

quartersChange = PurchasedAmount%25

purchasedAmount = PurchasedAmount/25

quarters = quarters – quartersChange

dimesChange = PurchasedAmount%10

purchasedAmount = PurchasedAmount/10

dimes = dimes – dimesChange

nickelsChange = PurchasedAmount%5

purchasedAmount = PurchasedAmount/5

nickels = nickels – nickelsChange

Display “Your change of” + change + “cents is given as:”

Display “quarter(s):”+ quartersChange

Display “dime(s):” + dimesChange

Display “nickel(s):” + nickelsChange

}

Display “Final report is being generated …”

Display “number of dollars :” + dollars

Display “number of quarters :” + quarters

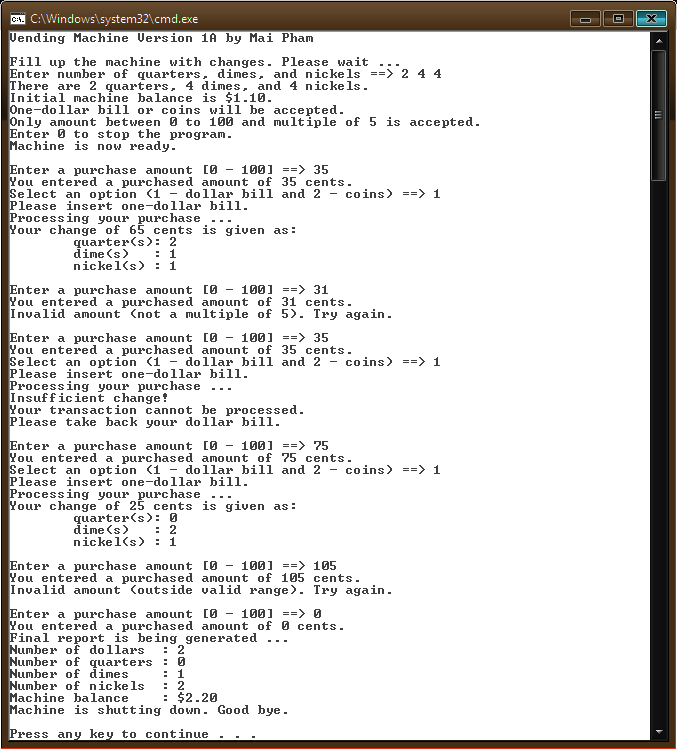
Display “number of dimes :” + dimes

Display “number of nickels :” + nickels

Display “Machine balance :” + balance

Display “machine is shutting down. Good bye”

INPUT/OUTPUT

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