Vending Machine :

Write a program that mimics the operations of a vending machine. More specifically, the program reads amounts of money that are inserted into the vending machine, asks the user to select an item, and then prints the change that’s returned to the user.

Use this implementation:

* Use two separate files – one that holds main and one that holds a VendingMachine class definition.
* Within the VendingMachine class, include only one variable, paymentSum. It holds the sum of money inserted for the current selection. In the interest of encapsulation, use local variables, as opposed to instance variables, whenever possible. Declare a variable locally within a method if the variable needs to persist only for the duration of a particular method call. Declare a variable as an instance variable if the variable needs to persist longer than the duration of a particular method call. For the VendingMachine class, the sum of the inserted money is the only thing that needs to persist longer than the duration of a particular method call.
* Within the VendingMachine class, include these methods:
  + insertMoney – This method prompts the user to enter an amount of money that is inserted into the machine. Input validation ensures that the user enters a positive number. The entered money amount adds to the accumulated sum of inserted money.
  + selectItem – This method first checks to make sure that some money has been inserted into the machine. If that’s the case, the method prompts the user to enter the selected item’s price. Input validation ensures that the entered price is a positive number and that it is no greater than the accumulated inserted money. Finally, the method calculates and prints a list of the coins that are to be returned to the user as change.
* Within the VendingMachineDriver class’s main method, use a loop that continues until the user enters ‘q’. Inside the loop, use a switch statement with case clauses for the three choices – insert money, select an item, quit.

Use this main method:

public static void main(String[] args)

{

Scanner stdIn = new Scanner(System.in);

char choice; // user's choice of action

boolean done = false; // flag that says user wants to quit

VendingMachine vm = new VendingMachine();

System.out.println("Welcome to John's vending machine!\n");

do

{

System.out.println(

"Options: (i)nsert money, (s)elect an item," + " (q)uit");

System.out.print("Enter i, s, or q ==> ");

choice = stdIn.nextLine().charAt(0);

switch (choice)

{

case 'i': case 'I':

vm.insertMoney();

break;

case 's': case 'S':

vm.selectItem();

break;

case 'q': case 'Q':

done = true;

break;

default:

System.out.println("Invalid selection.");

} // end switch

} while (!done);

} // end main

This UML class diagram identifies the classes and their members.

**VendingMachineDriver**

+main(args : String[]) : void

**VendingMachine**

-paymentSum : double

+insertMoney() : void

+selectItem() : void

Sample session:

Welcome to John's vending machine!

Options: (i)nsert money, (s)elect an item, (q)uit

Enter i, s, or q ==> *I*

Amount of money inserted: *5*

Options: (i)nsert money, (s)elect an item, (q)uit

Enter i, s, or q ==> *s*

Selected item's price: *2.94*

Your change is:

8 quarter(s)

0 dime(s)

1 nickle(s)

1 penny(ies)

Options: (i)nsert money, (s)elect an item, (q)uit

Enter i, s, or q ==> *x*

Invalid selection.

Options: (i)nsert money, (s)elect an item, (q)uit

Enter i, s, or q ==> *s*

Sorry, you can't select, since you haven't inserted money yet.

Options: (i)nsert money, (s)elect an item, (q)uit

Enter i, s, or q ==> *i*

Amount of money inserted: *1*

Options: (i)nsert money, (s)elect an item, (q)uit

Enter i, s, or q ==> *i*

Amount of money inserted: *0*

Invalid payment. Must enter a positive number.

Amount of money inserted: *.25*

Options: (i)nsert money, (s)elect an item, (q)uit

Enter i, s, or q ==> *s*

Selected item's price: *1.5*

Invalid selection. Price exceeds payment.

Selected item's price: *0*

Invalid price. Must enter a positive number.

Selected item's price: *1.13*

Your change is:

0 quarter(s)

1 dime(s)

0 nickle(s)

2 penny(ies)

Options: (i)nsert money, (s)elect an item, (q)uit

Enter i, s, or q ==> *q*