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Discrete Structures 2

Laboratory 1

Code Screenshots:

```python
1  def display_menu():
2      print("Vending Machine Menu:")
3      for i, item in enumerate(items, start=1):
4          print(f"{i}. {item['name']} - ₱{item['price']}")
5
6  def get_user_choice():
7      while True:
8          try:
9              choice = int(input("Enter the number of the item you want to
                   purchase (1-8): "))
10             if 1 <= choice <= 8:
11                 return choice
12             else:
13                 print("Invalid choice. Please enter a number between 1 and 8.")
14         except ValueError:
15             print("Invalid input. Please enter a valid number.")
16
17 def process_payment(price):
18     while True:
19         try:
20             amount = float(input(f"Insert money (Current price: ₱{price}): ₱"))
21             if amount >= price:
22                 return amount
23             else:
```

```python
24                    print("Insufficient funds. Please insert the exact amount or
                          more.")
25        except ValueError:
26            print("Invalid input. Please enter a valid amount.")
27
28  def dispense_item(item):
29      print(f"Dispensing {item['name']}... \nEnjoy your {item['name']}!")
30
31  # Sample items in the vending machine
32  items = [
33      {"name": "Protein Bar: Strawberry", "price": 40.00},
34      {"name": "Protein Bar: Chocolate", "price": 40.00},
35      {"name": "Protein Bar: Blueberry", "price": 40.50},
36      {"name": "Mineral Water: 500ml", "price": 20.00},
37      {"name": "VitaMilk: Chocolate", "price": 32.00},
38      {"name": "VitaMilk: Vanilla", "price": 32.00},
39      {"name": "Cobra: Yellow", "price": 28.00},
40      {"name": "Gatorade: Blue", "price": 36.00},
41  ]
42
43  def vending_machine():
44      display_menu()
45      choice = get_user_choice()
46      selected_item = items[choice - 1]
```

```python
47
48      amount_inserted = process_payment(selected_item['price'])
49      change = amount_inserted - selected_item['price']
50
51      dispense_item(selected_item)
52      print(f"Thank you for your purchase! Your change: ₱{change:.2f}")
53
54  # Run the vending machine
55  vending_machine()
```

How it works:

```
Vending Machine Menu:
1. Protein Bar: Strawberry - ₱40.0
2. Protein Bar: Chocolate - ₱40.0
3. Protein Bar: Blueberry - ₱40.5
4. Mineral Water: 500ml - ₱20.0
5. VitaMilk: Chocolate - ₱32.0
6. VitaMilk: Vanilla - ₱32.0
7. Cobra: Yellow - ₱28.0
8. Gatorade: Blue - ₱36.0
Enter the number of the item you want to purchase (1-8):
```

To initiate the purchasing process through a vending machine, we must input the number of items we wish to buy.

```
Vending Machine Menu:
1. Protein Bar: Strawberry - ₱40.0
2. Protein Bar: Chocolate - ₱40.0
3. Protein Bar: Blueberry - ₱40.5
4. Mineral Water: 500ml - ₱20.0
5. VitaMilk: Chocolate - ₱32.0
6. VitaMilk: Vanilla - ₱32.0
7. Cobra: Yellow - ₱28.0
8. Gatorade: Blue - ₱36.0
Enter the number of the item you want to purchase (1-8): 8
Insert money (Current price: ₱36.0): ₱50
```

Once we have specified the quantity, we must enter the required amount. This step lets us verify if we have enough funds to purchase the desired items.

```
Vending Machine Menu:
1. Protein Bar: Strawberry - ₱40.0
2. Protein Bar: Chocolate - ₱40.0
3. Protein Bar: Blueberry - ₱40.5
4. Mineral Water: 500ml - ₱20.0
5. VitaMilk: Chocolate - ₱32.0
6. VitaMilk: Vanilla - ₱32.0
7. Cobra: Yellow - ₱28.0
8. Gatorade: Blue - ₱36.0
Enter the number of the item you want to purchase (1-8): 8
Insert money (Current price: ₱36.0): ₱50
Dispensing Gatorade: Blue...
Enjoy your Gatorade: Blue!
Thank you for your purchase! Your change: ₱14.00
```

After this, the vending machine dispenses the item we have ordered and provides us with the correct change. We can then enjoy our chosen snack or beverage without any hassle.