Assignment 2:

SCENARIO 1:

```
Select Scenario:
1. Grocery Shopping List
2. Student Grades
3. Word Frequency Counter
4. Password Strength Checker
5. Voting System
0. Exit
Enter your choice (0-5): 1
Milk added to the shopping list.
Eggs added to the shopping list.
Current Shopping List:
Milk
Eggs
Eggs removed from the shopping list.
Current Shopping List:
Milk
```

SCENARIO 2:

```
Select Scenario:
1. Grocery Shopping List
2. Student Grades
3. Word Frequency Counter
4. Password Strength Checker
5. Voting System
0. Exit
Enter your choice (0-5): 2
Enter the number of students: 5
Enter the grade for student 1: 89
Enter the grade for student 2: 45
Enter the grade for student 3: 77
Enter the grade for student 4: 66
Enter the grade for student 5: 83
```

SCENARIO 3:

```
Select Scenario:
1. Grocery Shopping List
2. Student Grades
3. Word Frequency Counter
4. Password Strength Checker
5. Voting System
0. Exit
Enter your choice (0-5): 3
Word Frequency:
apple: 3 times
banana: 2 times
orange: 1 times
grape: 1 times
```

SCENARIO 4:

```
Select Scenario:
1. Grocery Shopping List
2. Student Grades
3. Word Frequency Counter
4. Password Strength Checker
5. Voting System
0. Exit
Enter your choice (0-5): 4
Enter your password: Smit+1234
Password is strong.
```

SCENARIO 5:

```
Select Scenario:
1. Grocery Shopping List
2. Student Grades
3. Word Frequency Counter
4. Password Strength Checker
5. Voting System
0. Exit
Enter your choice (0-5): 5
Enter the number of voters: 3
Voter 1, choose your candidate:
1. Candidate A
2. Candidate B
3. Candidate C
Enter the number of your chosen candidate: 1
Vote recorded for Candidate A.

Voter 2, choose your candidate:
1. Candidate A
2. Candidate B
3. Candidate C
Enter the number of your chosen candidate: 2
Vote recorded for Candidate B.

Voter 3, choose your candidate:
1. Candidate A
2. Candidate B
3. Candidate C
Enter the number of your chosen candidate: 1
Vote recorded for Candidate A.

Voting Results:
Candidate A: 2 votes
Candidate B: 1 votes
Candidate C: 0 votes
```

Code Abstract:

```
class GroceryList:
    def __init__(self):
        self.shopping_list = []

    def add_item(self, item):
        self.shopping_list.append(item)
        print(f"{item} added to the shopping list.")

    def remove_item(self, item):
        if item in self.shopping_list:
            self.shopping_list.remove(item)
            print(f"{item} removed from the shopping list.")
        else:
            print(f"{item} not found in the shopping list.")

    def display_list(self):
        print("Current Shopping List:")
        for item in self.shopping_list:
            print(item)


def calculate_average_grades(grades):
    total_grades = sum(grades)
    average_grade = total_grades / len(grades)
    return average_grade


def word_frequency_counter(word_list):
    word_frequency = {}
    for word in word_list:
        word_frequency[word] = word_frequency.get(word, 0) + 1

    print("Word Frequency:")
    for word, frequency in word_frequency.items():
        print(f"{word}: {frequency} times")


def check_password_strength(password):
    if len(password) < 8:
```

```
        return False
    if not any(char.isdigit() for char in password):
        return False
    if not any(char.isalpha() for char in password):
        return False
    return True


class VotingSystem:
    def __init__(self, candidates):
        self.candidates = candidates
        self.votes = {candidate: 0 for candidate in candidates}

    def vote(self, voter_choice):
        if voter_choice in range(1, len(self.candidates) + 1):
            candidate = self.candidates[voter_choice - 1]
            self.votes[candidate] += 1
            print(f"Vote recorded for {candidate}.")
        else:
            print("Invalid vote. Please choose a valid candidate.")


def grocery_shopping():
    grocery_list = GroceryList()
    grocery_list.add_item("Milk")
    grocery_list.add_item("Eggs")
    grocery_list.display_list()
    grocery_list.remove_item("Eggs")
    grocery_list.display_list()


def student_grades():
    num_students = int(input("Enter the number of students: "))

    if num_students < 5:
        print("Please enter grades for at least 5 students.")
        return

    grades = []
    for i in range(num_students):
        grade = float(input(f"Enter the grade for student {i + 1}: "))
        grades.append(grade)

    average_grade = calculate_average_grades(grades)
```

```
    print(f"The average grade is: {average_grade}")


def word_frequency():
    word_list = ["apple", "banana", "apple", "orange", "banana", "grape", "apple"]
    word_frequency_counter(word_list)


def password_strength():
    password = input("Enter your password: ")
    if check_password_strength(password):
        print("Password is strong.")
    else:
        print("Password does not meet the criteria.")


def voting_system():
    candidates = ['Candidate A', 'Candidate B', 'Candidate C']
    voting_system = VotingSystem(candidates)

    num_voters = int(input("Enter the number of voters: "))

    for voter in range(num_voters):
        print(f"\nVoter {voter + 1}, choose your candidate:")
        for i, candidate in enumerate(candidates, start=1):
            print(f"{i}. {candidate}")

        voter_choice = int(input("Enter the number of your chosen candidate: "))
        voting_system.vote(voter_choice)

    print("\nVoting Results:")
    for candidate, votes in voting_system.votes.items():
        print(f"{candidate}: {votes} votes")


# Main Program
def main():
    while True:
        print("\nSelect Scenario:")
        print("1. Grocery Shopping List")
        print("2. Student Grades")
        print("3. Word Frequency Counter")
        print("4. Password Strength Checker")
        print("5. Voting System")
```

```
        print("0. Exit")

        choice = input("Enter your choice (0-5): ")

        if choice == '1':
            grocery_shopping()
        elif choice == '2':
            student_grades()
        elif choice == '3':
            word_frequency()
        elif choice == '4':
            password_strength()
        elif choice == '5':
            voting_system()
        elif choice == '0':
            print("Exiting the program. Goodbye!")
            break
        else:
            print("Invalid choice. Please enter a number between 0 and 5.")

if __name__ == "__main__":
    main()
```