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Assignment Number: 7

```
import java.util.ArrayList;
import java.util.Scanner;

public class Gener {

   public static void main(String[] args) {
      int choice;

      Scanner sc = new Scanner(System.in);

      do {
         System.out.println("1. Check even or odd");
         System.out.println("2. Check prime or not");
         System.out.println("3. Check whether the number is palindrome or
not");
         System.out.println("4. Exit");
         System.out.print("Enter your choice: ");
         choice = sc.nextInt();

         switch (choice) {
            case 1: // Check even or odd
               System.out.print("Enter the number you want to check: ");
               int num = sc.nextInt();
               ArrayList<Integer> numbersList1 = new ArrayList<>();
               numbersList1.add(num);
               System.out.println("Number: " + numbersList1);
               if (num % 2 == 0) {
                  System.out.println(num + " is an even number!");
```

```
    } else {
        System.out.println(num + " is an odd number!");
    }
    break;

case 2: // Check prime or not
    System.out.print("Enter the number to check: ");
    int primeNum = sc.nextInt();
    ArrayList<Integer> numbersList2 = new ArrayList<>();
    numbersList2.add(primeNum);
    System.out.println("Number: " + numbersList2);

    boolean isPrime = true;
    if (primeNum <= 1) {
        isPrime = false;
    } else {
        for (int i = 2; i <= Math.sqrt(primeNum); i++) {
            if (primeNum % i == 0) {
                isPrime = false;
                break;
            }
        }
    }
    if (isPrime) {
        System.out.println(primeNum + " is a prime number!");
    } else {
        System.out.println(primeNum + " is not a prime number!");
    }
    break;

case 3: // Check palindrome or not
    System.out.print("Enter the number to check for palindrome: ");
    int palindromeNum = sc.nextInt();
    ArrayList<Integer> numbersList3 = new ArrayList<>();
    numbersList3.add(palindromeNum);
    System.out.println("Number: " + numbersList3);
```

```
            int originalNum = palindromeNum;
            int reversedNum = 0;
            while (palindromeNum != 0) {
               int remainder = palindromeNum % 10;
               reversedNum = (reversedNum * 10) + remainder;
               palindromeNum /= 10;
            }

            if (originalNum == reversedNum) {
               System.out.println(originalNum + " is a palindrome number!");
            } else {
               System.out.println(originalNum + " is not a palindrome
number!");
            }
            break;

         case 4: // Exit
            System.out.println("Exiting the program.");
            break;

         default:
            System.out.println("Invalid choice. Please try again.");
      }

   } while (choice != 4);
   sc.close();
  }
}
```

Output:

```
1. Check even or odd
2. Check prime or not
3. Check whether the number is palindrome or not
4. Exit
Enter your choice: 1
Enter the number you want to check: 4
Number: [4]
4 is an even number!
```

1. Check even or odd
2. Check prime or not
3. Check whether the number is palindrome or not
4. Exit
Enter your choice: 1
Enter the number you want to check: 5
Number: [5]
5 is an odd number!

1. Check even or odd
2. Check prime or not
3. Check whether the number is palindrome or not
4. Exit
Enter your choice: 2
Enter the number to check: 7
Number: [7]
7 is a prime number!

1. Check even or odd
2. Check prime or not
3. Check whether the number is palindrome or not
4. Exit
Enter your choice: 2
Enter the number to check: 8
Number: [8]
8 is not a prime number!

1. Check even or odd
2. Check prime or not
3. Check whether the number is palindrome or not
4. Exit
Enter your choice: 3
Enter the number to check for palindrome: 121
Number: [121]
121 is a palindrome number!

1. Check even or odd
2. Check prime or not
3. Check whether the number is palindrome or not
4. Exit
Enter your choice: 3
Enter the number to check for palindrome: 123
Number: [123]
123 is not a palindrome number!

1. Check even or odd
2. Check prime or not
3. Check whether the number is palindrome or not
4. Exit
Enter your choice: 4
Exiting the program.