```java
package prob04;

import java.util.Collection;

public class Problem04 {

    public static final Scanner kUserInput = new Scanner(System.in);

    public static void main(String[] args) {

        int choice = 0;
        boolean firstTime = true;
        while (!(1 <= choice && choice <= 5)) {
            if (!firstTime) {
                System.out.println("Input " + choice + " is not valid!\n");
            } else
                firstTime = false;
            System.out.println("Menu items\r\n" + "\r\n" + "Press 1 for Linear equations\r\n"
                    + "Press 2 for the shopping bill\r\n" + "Press 3 for directions\r\n"
                    + "Press 4 for square root and cube root of n numbers\r\n" + "Press 5 for QUIT\r\n");
            choice = kUserInput.nextInt();
        }

        switch (choice) {
        case 1 -> linearEquation();
        case 2 -> shoppingBill();
        case 3 -> routeSuggestions();
        case 4 -> roots();
        case 5 -> {
            System.out.println("Goodbye!");
            System.exit(0);
        }
        }

    }

    public static void linearEquation() {
        float a, b, c, d, e, f;
        a = b = c = d = e = f = 0f;
        System.out.println("\r\nLinear Equations\r\n" + "\r\n" + "ax
+by=e\r\n" + "cx+dy=f\r\n" + "\r\n");
        System.out.print("Enter value for a: ");
        a = kUserInput.nextFloat();
        System.out.print("Enter value for b: ");
        b = kUserInput.nextFloat();
        System.out.print("Enter value for e: ");
        e = kUserInput.nextFloat();
        System.out.print("Enter value for c: ");
        c = kUserInput.nextFloat();
        System.out.print("Enter value for d: ");
        d = kUserInput.nextFloat();
        System.out.print("Enter value for f: ");
        f = kUserInput.nextFloat();

        System.out.println("\r\n" + a + "x + " + b + "y" + " = " + e + "\r\n" + c + "x + " + d + "y" + " = " + f);
        float x, y;
        x = y = 0f;

        x = (e * d - b * f) / (a * d - b * c);
        y = (a * f - e * c) / (a * d - b * c);

        System.out.println("Solution: (" + x + "," + y + ")\r\n");
        main(null);
    }

    public static void shoppingBill() {
        final Map<String, Integer> kUnitsPrice = new LinkedHashMap<>();
        kUnitsPrice.put("Monitor", 100);
        kUnitsPrice.put("Keyboard", 50);
        kUnitsPrice.put("Mouse", 35);
        kUnitsPrice.put("CPU", 500);
        kUnitsPrice.put("RAM", 400);
        kUnitsPrice.put("SSD", 200);
        final double kSalesTax = 7.2e-2;

        Map<String, Integer> unitsQuantity = getQuantity(kUnitsPrice.keySet());
        printBill(kUnitsPrice, kSalesTax, unitsQuantity);

        main(null);
    }

```

```java
    public static Map<String, Integer> getQuantity(Collection<String> units) {
        Map<String, Integer> quantity = new LinkedHashMap<>();

        units.forEach((unit) -> {
            System.out.println("How many " + unit + "?");
            quantity.put(unit, kUserInput.nextInt());
        });

        return quantity;
    }

    public static void printBill(Map<String, Integer> unitsPrice, double salesTax, Map<String, Integer> unitQuantity) {
        int subtotal = unitsPrice.entrySet().stream().map(entry -> {
            return entry.getValue() * unitQuantity.get(entry.getKey());
        }).reduce(0, (x, y) -> x + y);

        System.out.println("*".repeat(65));
        System.out.printf("*%15s*%15s*%15s*%15s*\r\n", center("Item", 15), center("Unit Price", 15),
                center("Quantity", 15), center("Price", 15));
        System.out.println("*".repeat(65));
        unitsPrice.forEach((unit, price) -> {
            int quantity = unitQuantity.get(unit);
            System.out.printf("*%15s*%15s*%15s*%15s*\r\n", center(unit, 15),
                    center(String.format("$%.2f", (double) price), 15), center(String.valueOf(quantity), 15),
                    center(String.format("$%.2f", (double) quantity * price), 15));
        });
        System.out.println("*".repeat(65));
        System.out.printf("*%31s*%15s*%15s*\r\n", "", center("Subtotal", 15),
                center(String.format("$%.2f", (double) subtotal), 15));
        System.out.printf("*%31s*%15s*%15s*\r\n", "", center("Sales Tax", 15),
                center(String.format("$%.2f", (subtotal * salesTax)), 15));
        System.out.println("*".repeat(65));
        System.out.printf("*%31s*%15s*%15s*\r\n", "", center("Total",
15),
        center(String.format("$%.2f", subtotal + subtotal * salesTax), 15));
    System.out.println("*".repeat(65));
  }

  public static String center(String s, int size) {
    size = size - s.length();
    return " ".repeat(size / 2) + s + " ".repeat(((size + 1) / 2));
  }

  public static void routeSuggestions() {
    int sum = 0;
    while (sum <= 1000) {
      int miles = (int) (Math.random() * (99 - 10) + 10);
      System.out.println("In " + miles + " miles, " + (miles == 50 ? "take a right turn."
          : miles == 60 ? "take a left turn." : "continue straight."));
      sum += miles;
    }
    System.out.println("You have arrived at your destination.");

    main(null);
  }

  public static void roots() {
    System.out.println("Enter a number n to caclulate square, and cube roots of:");
    int n = kUserInput.nextInt();

    for (int i = 1; i <= n; i++) {
      System.out.println("\u221A("+i+") = " + String.format("%.4f", Math.sqrt(i)) + "\t\u221B("+i+") = " + String.format("%.4f", Math.cbrt(i)));
    }

    main(null);
  }
}

```