2102 HW3

Question 1

BMIclassification

This problem used the formula for metric, but the units of imperial. I decided to use the imperial conversion (which multiplies weight by 703).

Testcases

- 140 lbs, 59in
  -
```
/home/mastermind63/.jdks/openjdk-17.0.2
Enter your weight in pounds.
140
Enter your height in inches.
59
Your BMI is 28.273485
Your risk category is Overweight

Process finished with exit code 0
```
- 150lbs, 72in

```
/home/mastermind63/.jdks/openjdk-17.0.
Enter your weight in pounds.
150
Enter your height in inches.
72
Your BMI is 20.341434
Your risk category is Normal Weight


Process finished with exit code 0
```

Question 2

ArrayofTemperatures

Testcases

- Testcase 2 temps

```
/home/mastermind63/.jdks/openjdk-17.0.2/bin/java
How many temperature do you have?
2
Enter 2 temperatures:
12
14
The average temperature is 13.0
Relative to the average, the temperatures are:
12.0 (below average)
14.0 (above average)
```

- Testcase 5 temps

```
How many temperature do you have?
5
Enter 5 temperatures:
36
55
71
23
55
The average temperature is 48.0
Relative to the average, the temperatures are:
36.0 (below average)
55.0 (above average)
71.0 (above average)
23.0 (below average)
55.0 (above average)
```

Question 3

TransactionReport

Testcases

- Example Case

```
/home/mastermind63/.jdks/openjdk-17.0.2/bin/java -javaagent:/home/mastermind63/.local/s
Please enter the transaction filename:
info.txt
File Opened
Sold 50 of SODA (SKU: 4039) at $0.99 each. Sale is $49.5
Sold 5 of T-SHIRT (SKU: 9100) at $9.50 each. Sale is $47.5
Sold 30 of JAVA PROGRAMMING TEXTBOOK (SKU: 1949) at $110.00 each. Sale is $3300.0
Sold 25 of COOKIE (SKU: 5199) at $1.50 each. Sale is $37.5
Total sales: $3434.5

Process finished with exit code 0
```

- My Case

```
   Please enter the transaction filename:
   data.txt
   File Opened
   Sold 50 of Water (SKU: 4039) at $0.99 each. Sale is $49.5
   Sold 5 of Book (SKU: 9100) at $14.99 each. Sale is $74.95
   Sold 30 of Car (SKU: 1949) at $12.99 each. Sale is $389.69998
   Sold 7 of Burrito (SKU: 5199) at $4.99 each. Sale is $34.93
   Total sales: $549.07996

   Process finished with exit code 0
```

Question 4

Some other potential data structures that can be used instead of arrays are arraylists and hashmaps. Arraylists have the benefit of being able to store and retrieve items through an abstraction barrier, allowing useres to add and retrieve items in the best of both worlds between an array and list. A disadvantage of array lists are their heavier resource use than either option. Hashmaps can store items with key value pairs, and allow quick retreival of items in O(1) time. Despite this, their drawbacks include sequential items not being stored next to each other, making it a bad data structure for list traversal.