Dr. Barker's CS 2420
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Summer 2023

Dana Lewis Pancreas System

DanaLewisDataPoint

Variables

```java
    private String time;
    private int heartRate;
    private int insulinLevel;
```

Constructors

```java
    public DanaLewisDataPoint(String _time, int _heartRate, int _insulinLevel)
    {
        this.time = _time;
        this.heartRate = _heartRate;
        this.insulinLevel = _insulinLevel;
    }
```

toString Method

```java
    @Override
    public String toString()
    {
        //"Time 20:25, HR 103, IL 116"
        return String.format(
            format:"Time %s, HR %d, IL %d",
            this.time,
            this.heartRate,
            this.insulinLevel);
    }
```

Getters/Setters

```java
    public String getTime() { return this.time; }

    public void setTime(String _time) { this.time = _time; }

    public int getHeartRate() { return this.heartRate; }

    public void setHeartRate(int _heartRate) { this.heartRate = _heartRate; }

    public int getInsulinLevel() { return this.insulinLevel; }

    public void setInsulinLevel(int _insulinLevel) { this.insulinLevel = _insulinLevel; }
```

Main Testing

```java
    Run | Debug
    public static void main(String[] args)
    {
        DanaLewisDataPoint dp = new DanaLewisDataPoint(_time:"01:03", _heartRate:91, _insulinLevel:109);
        System.out.println(dp.toString());

        dp.setTime(_time:"02:56");
        dp.setHeartRate(_heartRate:99);
        dp.setInsulinLevel(_insulinLevel:5);

        System.out.println(dp.toString());

        System.out.printf(
            format:"Or| time is: %s | hr is: %d | il is: %d%n",
            dp.getTime(),
            dp.getHeartRate(),
            dp.getInsulinLevel());
    }
```

Testing Output

```
c:\Users\Initec\Documents\Personal\cs2420_summer2023\Chap
Time 01:03, HR 91, IL 109
Time 02:56, HR 99, IL 5
Or| time is: 02:56 | hr is: 99 | il is: 5
Press any key to continue . . .
```

Dana Lewis Pancreas System

DanaLewisDataArray

Variables

```
8       private DanaLewisDataPoint[] points;
9       private int newIndex = 0;
```

Constructors

```
11      public DanaLewisArray()
12      {
13          this.points = new DanaLewisDataPoint[1];
14      }
15
16      public DanaLewisArray(DanaLewisDataPoint _point)
17      {
18          this.points = new DanaLewisDataPoint[1];
19          this.points[this.newIndex++] = _point;
20      }
21
22      public DanaLewisArray(DanaLewisDataPoint[] _points)
23      {
24          this.points = new DanaLewisDataPoint[_points.length];
25          for (int i = 0; i < _points.length; i++)
26          {
27              this.points[i] = _points[i];
28              this.newIndex++;
29          }
30      }
```

toString Method

```
98      @Override
99      public String toString()
100     {
101         return String.format(
102             format:"Average HR: %5d    Average IL: %5d",
103             this.getCurrentAverageHeartRate(),
104             this.getCurrentAverageInsulinLevel());
105     }
```

Average Methods

```
70      public int getCurrentAverageHeartRate()
71      {
72          if (newIndex == 0)
73              return 0;
74
75          int average = 0;
76          for (int i = 0; i < newIndex; i++)
77          {
78              average += this.points[i].getHeartRate();
79          }
80
81          return (average / newIndex);
82      }
83
84      public int getCurrentAverageInsulinLevel()
85      {
86          if (newIndex == 0)
87              return 0;
88
89          int average = 0;
90          for (int i = 0; i < newIndex; i++)
91          {
92              average += this.points[i].getInsulinLevel();
93          }
94
95          return (average / newIndex);
96      }
```

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addDataPoint and resizeArray Methods

```java
public void addDataPoint(DanaLewisDataPoint _d)
{
    debug(String.format(
        format:"    The current array size is %d and the newIndex is %d%n",
        this.points.length, newIndex));

    if (!(newIndex < this.points.length))
    {
        debug(output:"    There is not room in the array");
        this.resizeArray();
    }
    debug(String.format(format:"    **Placing point at index: %d**%n", newIndex));
    this.points[newIndex++] = _d;


    debug(String.format(format:"%n"));
}

private void resizeArray()
{
    int newSize = this.points.length * 2;
    debug(String.format(format:"    --Resizing array to %d--%n", newSize));
    DanaLewisDataPoint[] newPoints = new DanaLewisDataPoint[newSize];

    for (int i = 0; i < this.points.length; i++)
    {
        newPoints[i] = this.points[i];
    }
    this.points = newPoints;
}
```

Main: Testing

```java
System.out.println(x:"First simple tests");
DanaLewisArray empty = new DanaLewisArray();
System.out.println(empty.toString());

DanaLewisDataPoint dp = new DanaLewisDataPoint(_time:"01:03", _heartRate:91, _insulinLevel:109);
DanaLewisArray single = new DanaLewisArray(dp);
System.out.println(single.toString());


DanaLewisDataPoint[] d = {
    new DanaLewisDataPoint(_time:"01:03", _heartRate:91, _insulinLevel:109),
    new DanaLewisDataPoint(_time:"01:08", _heartRate:100, _insulinLevel:10),
    new DanaLewisDataPoint(_time:"01:09", _heartRate:97, _insulinLevel:101)};

DanaLewisArray multi = new DanaLewisArray(d);
System.out.println(multi.toString());
```

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Main: File Testing

```
134         DanaLewisArray smallFile  = new DanaLewisArray();
135         String[] dataPoints = getDataPoints(filename:"0010Points.txt");
136 
137         if (dataPoints != null)
138         {
139             for (int i = 1; i < dataPoints.length; i++)
140             {
141                 String[] data = dataPoints[i].split(regex:" , ");
142 
143                 if (data.length != 3)
144                     continue;
145 
146 
147                 smallFile.addDataPoint(
148                     new DanaLewisDataPoint(
149                         data[0], Integer.parseInt(data[1]), Integer.parseInt(data[2])));
150 
151 
152 
153             }
154         }
155 
156         System.out.println(smallFile.toString());
157 
158 
159         System.out.println(x:"Now to test the large file");
160 
161 
162         DanaLewisArray largeFile  = new DanaLewisArray();
163         dataPoints = getDataPoints(filename:"unknownPoints.txt");
164 
165         if (dataPoints != null)
166         {
167             for (int i = 1; i < dataPoints.length; i++)
168             {
169                 String[] data = dataPoints[i].split(regex:" , ");
170 
171                 if (data.length != 3)
172                     continue;
173 
174 
175                 largeFile.addDataPoint(
176                     new DanaLewisDataPoint(
177                         data[0], Integer.parseInt(data[1]), Integer.parseInt(data[2])));
178 
179 
180 
181             }
182         }
183 
184         System.out.println(largeFile.toString());
```

Testing Output

```
c:\Users\Initec\Documents\Personal\cs2420_summer2023\Chapter7\DanaLewis - VS Code Console
First simple tests
Average HR:     0    Average IL:     0
Average HR:    91    Average IL:   109
Average HR:    96    Average IL:    73
Now to test the small file
Average HR:   101    Average IL:   115
Now to test the large file
Average HR:    76    Average IL:    89
Press any key to continue . . .
```

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DanaLewisTesting Output