```java
import java.util.Scanner;
import java.io.FileNotFoundException;
import java.io.FileReader;

/*
 * Name:            Luke O'Brien
 * Class Name:      Data Structure and Algorithms
 * Section:         002
 * Assignment #:    2
 * Due Date:        Feb 5, 2020
 *
 * General Description:
 *
 * The code bellow takes the file named "trains.txt" and parses the data by line.
 * Once parsed, the code then stores the data into a polymorphic array depending on train type.
 * After all the data from the file is stored in the array, it is printed out to the user.
 */


public class OBrienLukeAssignment2
{
    //------------------------------------------------------------------------------ Main
    public static void main(String[] args)
    {
        int arraySize = 0; //tells the program how many objects there are going to be

        try
        {
            FileReader trainFiles = new FileReader("trains.txt");
            Scanner parser = new Scanner(trainFiles);

            if(parser.hasNextInt())
                arraySize = parser.nextInt();
            parser.nextLine();

            Trains[] train = new Trains[arraySize]; //creates the Object array

            //Small visual orginizer
            System.out.println("-------------------------------------------------------------------------------");
            System.out.println("Type:\t\t\tSpeed:\t\tName:\t\t\t\tBenifits:");
            System.out.println("-------------------------------------------------------------------------------");

            for(int x=0; x<train.length; x++) //runs though the file by line. For statement used to create new object in array at same time
            {
                String type = parser.next();
                double speed = Double.parseDouble(parser.next());
                String name = parser.nextLine();

                //------------------------- If Blocks, used to know what object to put the data into
                if(type.toLowerCase().equals("highspeed"))
                    train[x] = new HighSpeedTrain(type,speed,name);
                if(type.toLowerCase().equals("monorail"))
```

```
53                      train[x] = new MonorailTrain(type,speed,name);
54                  if(type.toLowerCase().equals("lightrail"))
55                      train[x] = new LightrailTrain(type,speed,name);
56                  if(type.toLowerCase().equals("cog"))
57                      train[x] = new CogTrain(type+"\t",speed,name);
58                  //-------------------------
59              }
60              parser.close();
61
62              //------------------------- The printer
63              for(int x=0; x<train.length; x++)
64              {
65                  System.out.print(train[x].getType() + "\t\t");
66                  System.out.print(train[x].getMaxSpeed() + "\t\t");
67                  System.out.print(train[x].getName() + "\t\t");
68                  System.out.println(train[x].benifits());
69              }
70              //-------------------------
71
72          }
73          catch(FileNotFoundException e) //If the file the program asked for is not to be found,
  it tells you
74          {
75              System.out.println("-----\nFile Not Found!!!\n-----");
76          }
77      }
78  }
79  //-------------------------------------------------Trains (Parent Class)
80  abstract class Trains
81  {
82      private String type;
83      private double maxSpeed;
84      private String name;
85
86      public Trains() {
87          //Default Constructor
88      }
89
90      public Trains(String type, double maxSpeed, String name)
91      {
92          this.type = type;
93          this.maxSpeed = maxSpeed;
94          this.name = name;
95      }
96
97      //----------Getters
98
99      public String getType()
100     {
101         return type;
102     }
103     public double getMaxSpeed()
104     {
105         return maxSpeed;
106     }
107     public String getName()
108     {
```

```
109         return name;
110     }
111 
112     //---------- "Policies"
113     abstract String benifits();
114 }
115 
116 //------------------------------------------------ High-Speed Train
117 
118 class HighSpeedTrain extends Trains
119 {
120     HighSpeedTrain() {
121         //Default Constructor
122     }
123 
124     HighSpeedTrain(String type,double speed, String name)
125     {
126         super(type,speed,name);
127     }
128 
129     @Override
130     String benifits()
131     {
132         return "Travels at speeds between 125 and 267 mph";
133     }
134 }
135 //------------------------------------------------ Monorail Train
136 class MonorailTrain extends Trains
137 {
138     MonorailTrain(){
139         //Default Constructor
140     }
141 
142     MonorailTrain(String type, double speed, String name)
143     {
144         super(type,speed,name);
145     }
146 
147     @Override
148     String benifits()
149     {
150         return "Minimal footprint and quieter";
151     }
152 }
153 //------------------------------------------------ Lightrail Train
154 class LightrailTrain extends Trains
155 {
156     LightrailTrain(){
157         //Default Constructor
158     }
159 
160     LightrailTrain(String type, double speed, String name)
161     {
162         super(type,speed,name);
163     }
164 
165     @Override
```

```
166     String benifits()
167     {
168         return "Tighter turning radius";
169     }
170 }
171 //------------------------------------------------ Cog Train
172 class CogTrain extends Trains
173 {
174     CogTrain(){
175         //Default Constructor
176     }
177 
178     CogTrain(String type, double speed, String name)
179     {
180         super(type,speed,name);
181     }
182 
183     @Override
184     String benifits()
185     {
186         return "Can climb grades up to 48%";
187     }
188 }
```