

# Project B: Interactive Data Visualization

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# Concept Summary

The UNSD yearly provides global environmental statistics. As technology is constantly changing, and as us humans are still consuming natural resources, the world is encouraged to develop technologies to produce energy in a “cleaner” way. The UNSD has been keeping track of the way of production of energy at a global scale.

This case study shows the comparison through time of the total percentage of energy being produce by non renewable sources vs renewable sources.

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# Concept Definition

# Part 1: Concept Definition

## Who

The results of this project is targeted to be used by the UNSD ( United Nations Statistics Division). The UNSD servers under the United Nations Department of Economics and Social Affairs. This specific department was established in 1947, with the purpose of supplying the statistical needs and coordinate activities for the global statistical system. This program records global statistics from all aspects: environment, energy, population, consumerism, economics, etc. From the data that they gather, the UN, G-16, and the G-8, decide the paths that the countries and the should should take in the future.

# Part 1: Concept Definition

## What

The latest Total Energy Supply report were compiled in 2015. The UNSD has already gathered the data and presented all the statistics, but they're trying to find a way to better explain what the data that was recollected actually means; they want to make the data "easier" to be read by the public. Because of it, they have hired me to create a Data Visualization interactive and non interactive diagram. I have gathered data statistics from multiple sources to compare if the data from one source and the other are equal, slightly different, completely different, with the purpose of validating the data that I'm going to use.

# Part 1: Concept Definition

## When

Since updated report has already been released to the public, the UNSD would like to have the Data Visualization ready by the end of November, so the information can be checked, compiled, and released by December; before the new period starts.

## Where

The info-graphics that I'm going to provide are going to be used in the Energy Statistics Yearbook provided by the Environmental Statistics division of the UNSD.

## Why

As the UNSD has been releasing their studies to the public, it has come to their attention that people are not quite grasping the results of their collective data. If you open the Energy Supply statistics per region, the Excel sheet is extensive; filled with numbers and percentage. To provide an easier insight of what's happening in the world the UNSD has decided to provide Data Visualization.

# Sketches and Ideation

Part II

# Energy Supply

## Introduction

- Visual 0

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- Visual 2

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# Comparison of Renewable Energy

- Visual 1

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- Visual 3

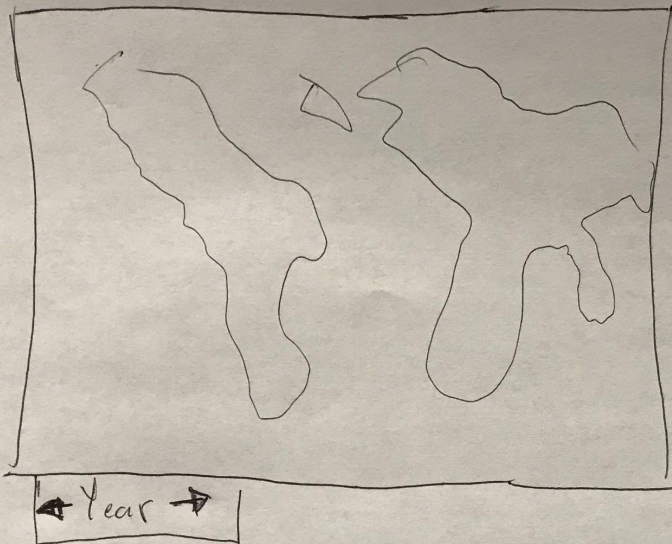
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Visual

1

Based on  
Renewable  
Electric  
Production  
Excel



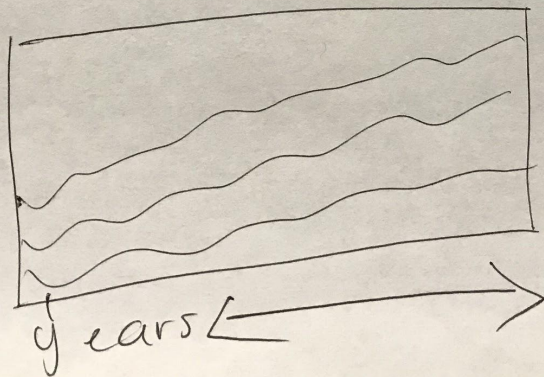
Number  
changes  
as you  
swap the  
years

World wide

Visual 2

Line graph

by 5  
1990-2015

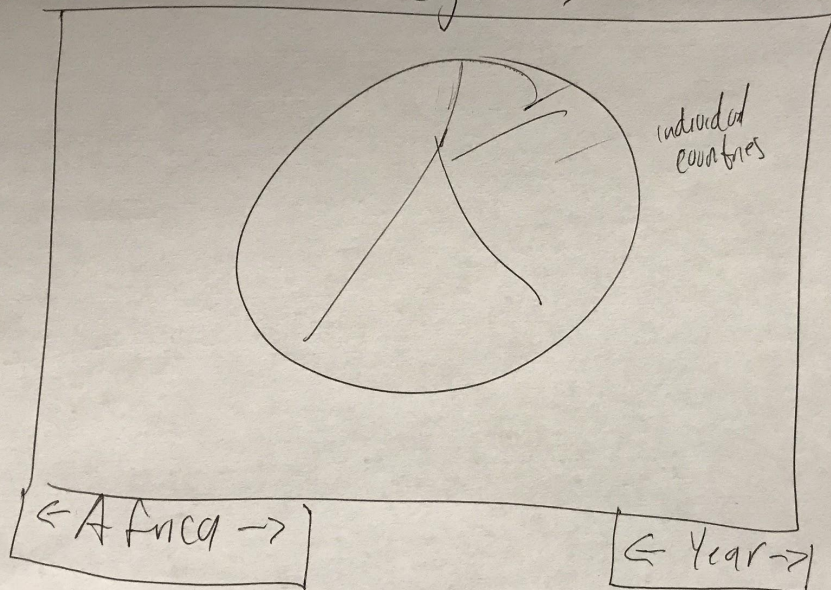


tot Enrg Supply  
by region  
Aug

Visual 0

Tot Energy Supply

Regions

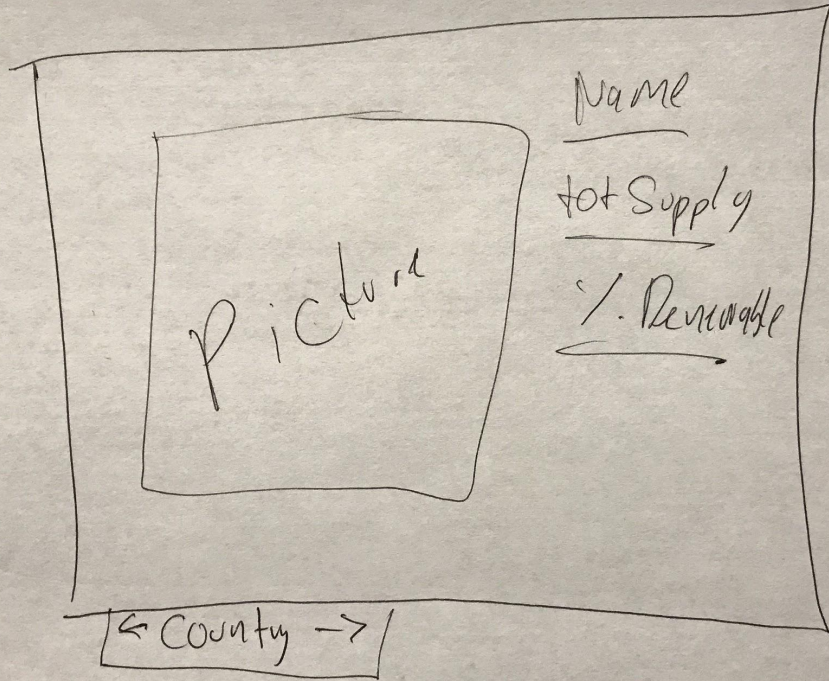


One knob changes  
geographic region

Time period  
of the  
region



U1504/3 2013 case study

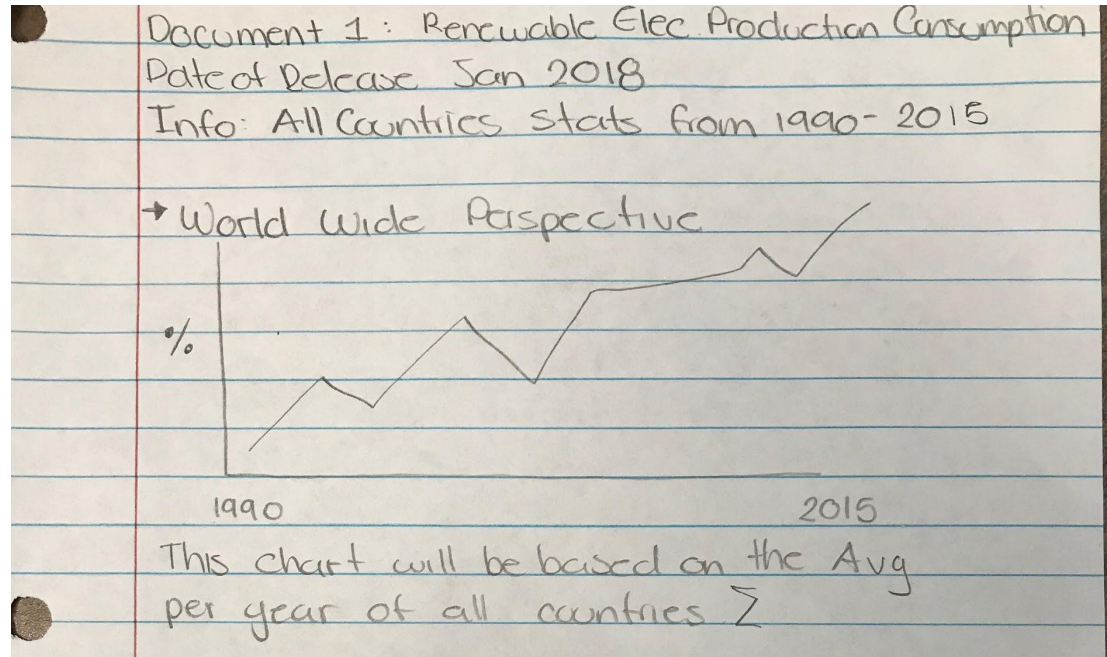


# Sketches and Ideation

## Part 3: Final Sketches

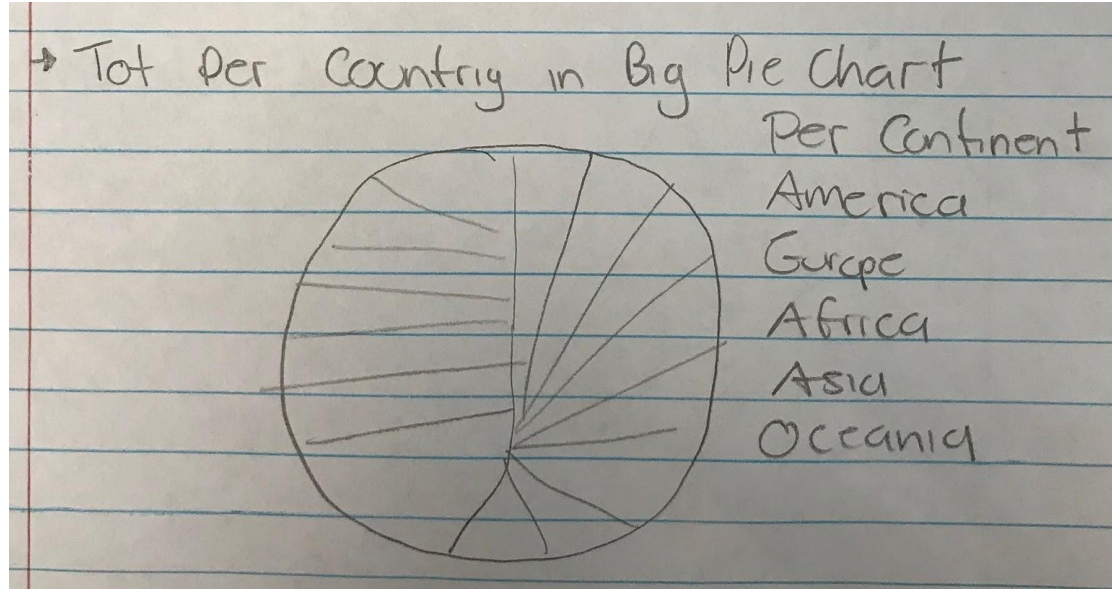
# World Wide Perspective

This graph will represent the Renewable Electricity Production Consumption in terms of percentage at a worldwide perspective. I would add the values of all the countries and get the average per year.



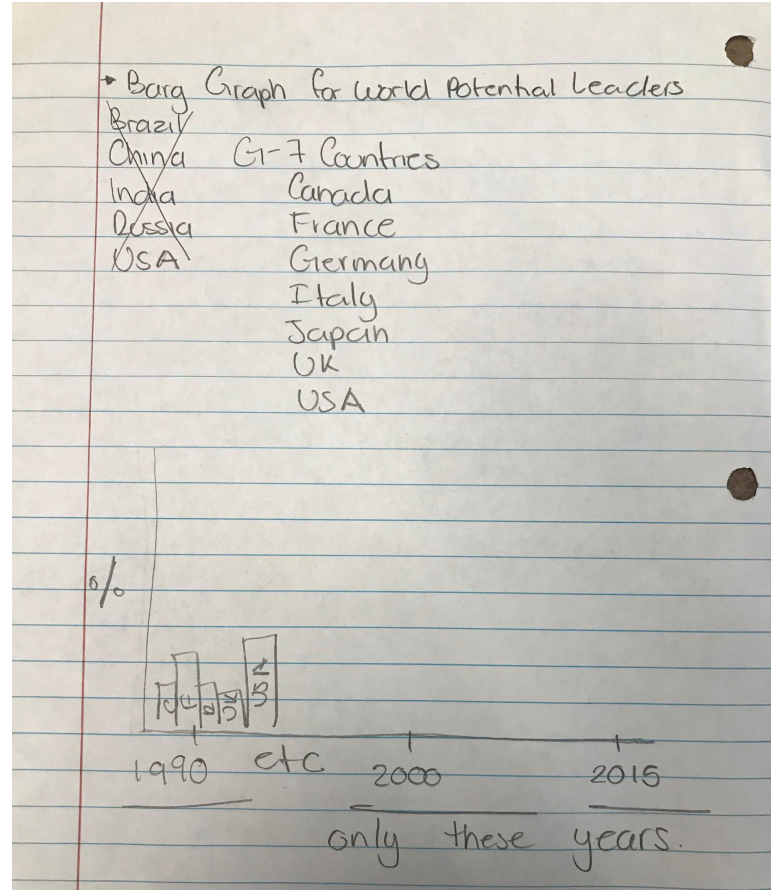
# Total Production Per Country, Per Region Pie Chart

For this chart, I'm going to split the data and arrange the countries into their respective continent, then make a Pie Chart per continent based on the total production made of each country.



# G-7 Comparison Bar Graph

In this chart i would be comparing the total production of the years 1990, 2000, and 2015 of the countries that form the G-7.




# Pseudocode

Part IV



# Part 4: Pseudocode

- Arrange the data in the files into the appropriate order.
  - Create canvas in Processing.
  - Write statements that will load the data into Processing.
  - **Focus on Chart 1: World Wide Perspective Scatter Plot.**
  - Grab in the appropriate values for the **single row - multiple column**: arrays.
  - Plot the points.
  - Compare the data visualization with the actual data to check for consistency and inconsistency.
  - **Focus on Chart 2: Total Production Per Continent Pie Chart**
  - Repeat the steps below for each continent
  - Grab in the appropriate values for the **multiple row - single column**: arrays.
  - Plot the points.
  - Compare the data visualization with the actual data to check for consistency and inconsistency.
- 

# Part 4: Pseudocode

- **Focus on Chart 3: Comparison of Total Production of G-7 Countries Bar Graph**
- Repeat the steps below for the sets of years: 1990, 2000, 2015: each year elements are multiple row, single column
- Grab in the appropriate values for the **multiple row - single column**: arrays.
- Plot the points.
- Compare the data visualization with the actual data to check for consistency and inconsistency.





# Step Back

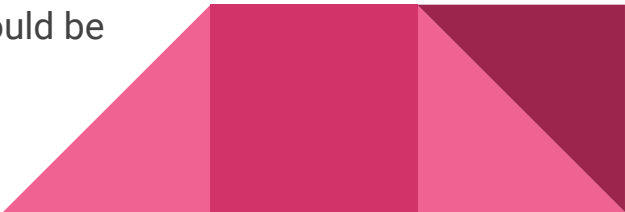
# Overview

In the transition of developing this project, I bumped through a lot of coding barriers; for example,

- Reading data
- Getting the data in the right format
- Making values dynamic
- Separating figures from one another
- Display of values

I went through seven diverse and different attempts to address the project and on the seventh time I got it to work.

In this processing book, I'm not going to include all seven folders, but I would be glad to talk about it if needed.



# Finessing the System

- Instead of loading one big data file, I loaded three different files
  - Three different for() loops to extract the data from each file
    - Each loop would draw a specific graph
- Global functions used were:
  - Void setup()
  - Void draw()
  - Void mousePressed()
    - Issue in stopping the infinite loop
      - Command: noLoop() , resolves that issue
- A lot of math involved for dynamic positioning



# Upcoming Improvements

- Make each table pop out individually with a `mousePressed()` that would work a long my format of code.
- Improve table data for better Labeling



DataVisualization

Table



```
1 // DELCARING UNIVERSAL VARIABLES
2 color[] dessert = {#9F9694, #791F33, #BA3D49, #F1E6D4, #E2E1DC};
3 color[] palette = dessert;
4
5 Table t1;
6 int rowCount;
7
8 Table t2;
9 int rowCount2;
10
11 Table t3;
12 int rowCount3;
13
14 int YY = 900;
15
16 color fillVal = color(126);
17 /*****
18 *****/
19 void setup(){
20     // canvas
21     size (1900, 900);
22     smooth();
23
24     //load table and verify table reading is appropriate
25
26     // TABLE 1
27     t1 = new Table("TableOne.tsv");
28     rowCount = t1.getRowCount();
29     println("rowCount = " + rowCount);
30
31     // TABLE 2
32     t2 = new Table("Table3.tsv");
33     rowCount2 = t2.getRowCount();
```

# Final Code

## Part 5

DataVisualization

Table



```
1 // DECLARING UNIVERSAL VARIABLES
2 color[] dessert = {#9F9694, #791F33, #BA3D49, #F1E6D4, #E2E1DC};
3 color[] palette = dessert;
4
5 Table t1;
6 int rowCount;
7
8 Table t2;
9 int rowCount2;
10
11 Table t3;
12 int rowCount3;
13
14 int YY = 900;
15
16 color fillVal = color(126);
17 /*****
18 *****/
19 void setup(){
20     // canvas
21     size (1900, 900);
22     smooth();
23
24     //load table and verify table reading is appropriate
25
26     // TABLE 1
27     t1 = new Table("TableOne.tsv");
28     rowCount = t1.getRowCount();
29     println("rowCount = " + rowCount);
30
31     // TABLE 2
32     t2 = new Table("Table3.tsv");
33     rowCount2 = t2.getRowCount();
34     println("rowCount2 = " + rowCount2);
35
36     // TABLE 3
37     t3 = new Table("Table2.tsv");
38     rowCount3 = t3.getRowCount();
39     println("rowCount3 = " + rowCount3);
40
41     // TABLE 4
42     t4 = new Table("Table4.tsv");
43     rowCount4 = t4.getRowCount();
44     println("rowCount4 = " + rowCount4);
45
46     // TABLE 5
47     t5 = new Table("Table5.tsv");
48     rowCount5 = t5.getRowCount();
49     println("rowCount5 = " + rowCount5);
50
51     // TABLE 6
52     t6 = new Table("Table6.tsv");
53     rowCount6 = t6.getRowCount();
54     println("rowCount6 = " + rowCount6);
55
56     // TABLE 7
57     t7 = new Table("Table7.tsv");
58     rowCount7 = t7.getRowCount();
59     println("rowCount7 = " + rowCount7);
60
61     // TABLE 8
62     t8 = new Table("Table8.tsv");
63     rowCount8 = t8.getRowCount();
64     println("rowCount8 = " + rowCount8);
65
66     // TABLE 9
67     t9 = new Table("Table9.tsv");
68     rowCount9 = t9.getRowCount();
69     println("rowCount9 = " + rowCount9);
70
71     // TABLE 10
72     t10 = new Table("Table10.tsv");
73     rowCount10 = t10.getRowCount();
74     println("rowCount10 = " + rowCount10);
75
76     // TABLE 11
77     t11 = new Table("Table11.tsv");
78     rowCount11 = t11.getRowCount();
79     println("rowCount11 = " + rowCount11);
80
81     // TABLE 12
82     t12 = new Table("Table12.tsv");
83     rowCount12 = t12.getRowCount();
84     println("rowCount12 = " + rowCount12);
85
86     // TABLE 13
87     t13 = new Table("Table13.tsv");
88     rowCount13 = t13.getRowCount();
89     println("rowCount13 = " + rowCount13);
90
91     // TABLE 14
92     t14 = new Table("Table14.tsv");
93     rowCount14 = t14.getRowCount();
94     println("rowCount14 = " + rowCount14);
95
96     // TABLE 15
97     t15 = new Table("Table15.tsv");
98     rowCount15 = t15.getRowCount();
99     println("rowCount15 = " + rowCount15);
100
101     // TABLE 16
102     t16 = new Table("Table16.tsv");
103     rowCount16 = t16.getRowCount();
104     println("rowCount16 = " + rowCount16);
105
106     // TABLE 17
107     t17 = new Table("Table17.tsv");
108     rowCount17 = t17.getRowCount();
109     println("rowCount17 = " + rowCount17);
110
111     // TABLE 18
112     t18 = new Table("Table18.tsv");
113     rowCount18 = t18.getRowCount();
114     println("rowCount18 = " + rowCount18);
115
116     // TABLE 19
117     t19 = new Table("Table19.tsv");
118     rowCount19 = t19.getRowCount();
119     println("rowCount19 = " + rowCount19);
120
121     // TABLE 20
122     t20 = new Table("Table20.tsv");
123     rowCount20 = t20.getRowCount();
124     println("rowCount20 = " + rowCount20);
125
126     // TABLE 21
127     t21 = new Table("Table21.tsv");
128     rowCount21 = t21.getRowCount();
129     println("rowCount21 = " + rowCount21);
130
131     // TABLE 22
132     t22 = new Table("Table22.tsv");
133     rowCount22 = t22.getRowCount();
134     println("rowCount22 = " + rowCount22);
135
136     // TABLE 23
137     t23 = new Table("Table23.tsv");
138     rowCount23 = t23.getRowCount();
139     println("rowCount23 = " + rowCount23);
140
141     // TABLE 24
142     t24 = new Table("Table24.tsv");
143     rowCount24 = t24.getRowCount();
144     println("rowCount24 = " + rowCount24);
145
146     // TABLE 25
147     t25 = new Table("Table25.tsv");
148     rowCount25 = t25.getRowCount();
149     println("rowCount25 = " + rowCount25);
150
151     // TABLE 26
152     t26 = new Table("Table26.tsv");
153     rowCount26 = t26.getRowCount();
154     println("rowCount26 = " + rowCount26);
155
156     // TABLE 27
157     t27 = new Table("Table27.tsv");
158     rowCount27 = t27.getRowCount();
159     println("rowCount27 = " + rowCount27);
160
161     // TABLE 28
162     t28 = new Table("Table28.tsv");
163     rowCount28 = t28.getRowCount();
164     println("rowCount28 = " + rowCount28);
165
166     // TABLE 29
167     t29 = new Table("Table29.tsv");
168     rowCount29 = t29.getRowCount();
169     println("rowCount29 = " + rowCount29);
170
171     // TABLE 30
172     t30 = new Table("Table30.tsv");
173     rowCount30 = t30.getRowCount();
174     println("rowCount30 = " + rowCount30);
175
176     // TABLE 31
177     t31 = new Table("Table31.tsv");
178     rowCount31 = t31.getRowCount();
179     println("rowCount31 = " + rowCount31);
180
181     // TABLE 32
182     t32 = new Table("Table32.tsv");
183     rowCount32 = t32.getRowCount();
184     println("rowCount32 = " + rowCount32);
185
186     // TABLE 33
187     t33 = new Table("Table33.tsv");
188     rowCount33 = t33.getRowCount();
189     println("rowCount33 = " + rowCount33);
190
191     // TABLE 34
192     t34 = new Table("Table34.tsv");
193     rowCount34 = t34.getRowCount();
194     println("rowCount34 = " + rowCount34);
195
196     // TABLE 35
197     t35 = new Table("Table35.tsv");
198     rowCount35 = t35.getRowCount();
199     println("rowCount35 = " + rowCount35);
200
201     // TABLE 36
202     t36 = new Table("Table36.tsv");
203     rowCount36 = t36.getRowCount();
204     println("rowCount36 = " + rowCount36);
205
206     // TABLE 37
207     t37 = new Table("Table37.tsv");
208     rowCount37 = t37.getRowCount();
209     println("rowCount37 = " + rowCount37);
210
211     // TABLE 38
212     t38 = new Table("Table38.tsv");
213     rowCount38 = t38.getRowCount();
214     println("rowCount38 = " + rowCount38);
215
216     // TABLE 39
217     t39 = new Table("Table39.tsv");
218     rowCount39 = t39.getRowCount();
219     println("rowCount39 = " + rowCount39);
220
221     // TABLE 40
222     t40 = new Table("Table40.tsv");
223     rowCount40 = t40.getRowCount();
224     println("rowCount40 = " + rowCount40);
225
226     // TABLE 41
227     t41 = new Table("Table41.tsv");
228     rowCount41 = t41.getRowCount();
229     println("rowCount41 = " + rowCount41);
230
231     // TABLE 42
232     t42 = new Table("Table42.tsv");
233     rowCount42 = t42.getRowCount();
234     println("rowCount42 = " + rowCount42);
235
236     // TABLE 43
237     t43 = new Table("Table43.tsv");
238     rowCount43 = t43.getRowCount();
239     println("rowCount43 = " + rowCount43);
240
241     // TABLE 44
242     t44 = new Table("Table44.tsv");
243     rowCount44 = t44.getRowCount();
244     println("rowCount44 = " + rowCount44);
245
246     // TABLE 45
247     t45 = new Table("Table45.tsv");
248     rowCount45 = t45.getRowCount();
249     println("rowCount45 = " + rowCount45);
250
251     // TABLE 46
252     t46 = new Table("Table46.tsv");
253     rowCount46 = t46.getRowCount();
254     println("rowCount46 = " + rowCount46);
255
256     // TABLE 47
257     t47 = new Table("Table47.tsv");
258     rowCount47 = t47.getRowCount();
259     println("rowCount47 = " + rowCount47);
260
261     // TABLE 48
262     t48 = new Table("Table48.tsv");
263     rowCount48 = t48.getRowCount();
264     println("rowCount48 = " + rowCount48);
265
266     // TABLE 49
267     t49 = new Table("Table49.tsv");
268     rowCount49 = t49.getRowCount();
269     println("rowCount49 = " + rowCount49);
270
271     // TABLE 50
272     t50 = new Table("Table50.tsv");
273     rowCount50 = t50.getRowCount();
274     println("rowCount50 = " + rowCount50);
275
276     // TABLE 51
277     t51 = new Table("Table51.tsv");
278     rowCount51 = t51.getRowCount();
279     println("rowCount51 = " + rowCount51);
280
281     // TABLE 52
282     t52 = new Table("Table52.tsv");
283     rowCount52 = t52.getRowCount();
284     println("rowCount52 = " + rowCount52);
285
286     // TABLE 53
287     t53 = new Table("Table53.tsv");
288     rowCount53 = t53.getRowCount();
289     println("rowCount53 = " + rowCount53);
290
291     // TABLE 54
292     t54 = new Table("Table54.tsv");
293     rowCount54 = t54.getRowCount();
294     println("rowCount54 = " + rowCount54);
295
296     // TABLE 55
297     t55 = new Table("Table55.tsv");
298     rowCount55 = t55.getRowCount();
299     println("rowCount55 = " + rowCount55);
300
301     // TABLE 56
302     t56 = new Table("Table56.tsv");
303     rowCount56 = t56.getRowCount();
304     println("rowCount56 = " + rowCount56);
305
306     // TABLE 57
307     t57 = new Table("Table57.tsv");
308     rowCount57 = t57.getRowCount();
309     println("rowCount57 = " + rowCount57);
310
311     // TABLE 58
312     t58 = new Table("Table58.tsv");
313     rowCount58 = t58.getRowCount();
314     println("rowCount58 = " + rowCount58);
315
316     // TABLE 59
317     t59 = new Table("Table59.tsv");
318     rowCount59 = t59.getRowCount();
319     println("rowCount59 = " + rowCount59);
320
321     // TABLE 60
322     t60 = new Table("Table60.tsv");
323     rowCount60 = t60.getRowCount();
324     println("rowCount60 = " + rowCount60);
325
326     // TABLE 61
327     t61 = new Table("Table61.tsv");
328     rowCount61 = t61.getRowCount();
329     println("rowCount61 = " + rowCount61);
330
331     // TABLE 62
332     t62 = new Table("Table62.tsv");
333     rowCount62 = t62.getRowCount();
334     println("rowCount62 = " + rowCount62);
335
336     // TABLE 63
337     t63 = new Table("Table63.tsv");
338     rowCount63 = t63.getRowCount();
339     println("rowCount63 = " + rowCount63);
340
341     // TABLE 64
342     t64 = new Table("Table64.tsv");
343     rowCount64 = t64.getRowCount();
344     println("rowCount64 = " + rowCount64);
345
346     // TABLE 65
347     t65 = new Table("Table65.tsv");
348     rowCount65 = t65.getRowCount();
349     println("rowCount65 = " + rowCount65);
350
351     // TABLE 66
352     t66 = new Table("Table66.tsv");
353     rowCount66 = t66.getRowCount();
354     println("rowCount66 = " + rowCount66);
355
356     // TABLE 67
357     t67 = new Table("Table67.tsv");
358     rowCount67 = t67.getRowCount();
359     println("rowCount67 = " + rowCount67);
360
361     // TABLE 68
362     t68 = new Table("Table68.tsv");
363     rowCount68 = t68.getRowCount();
364     println("rowCount68 = " + rowCount68);
365
366     // TABLE 69
367     t69 = new Table("Table69.tsv");
368     rowCount69 = t69.getRowCount();
369     println("rowCount69 = " + rowCount69);
370
371     // TABLE 70
372     t70 = new Table("Table70.tsv");
373     rowCount70 = t70.getRowCount();
374     println("rowCount70 = " + rowCount70);
375
376     // TABLE 71
377     t71 = new Table("Table71.tsv");
378     rowCount71 = t71.getRowCount();
379     println("rowCount71 = " + rowCount71);
380
381     // TABLE 72
382     t72 = new Table("Table72.tsv");
383     rowCount72 = t72.getRowCount();
384     println("rowCount72 = " + rowCount72);
385
386     // TABLE 73
387     t73 = new Table("Table73.tsv");
388     rowCount73 = t73.getRowCount();
389     println("rowCount73 = " + rowCount73);
390
391     // TABLE 74
392     t74 = new Table("Table74.tsv");
393     rowCount74 = t74.getRowCount();
394     println("rowCount74 = " + rowCount74);
395
396     // TABLE 75
397     t75 = new Table("Table75.tsv");
398     rowCount75 = t75.getRowCount();
399     println("rowCount75 = " + rowCount75);
400
401     // TABLE 76
402     t76 = new Table("Table76.tsv");
403     rowCount76 = t76.getRowCount();
404     println("rowCount76 = " + rowCount76);
405
406     // TABLE 77
407     t77 = new Table("Table77.tsv");
408     rowCount77 = t77.getRowCount();
409     println("rowCount77 = " + rowCount77);
410
411     // TABLE 78
412     t78 = new Table("Table78.tsv");
413     rowCount78 = t78.getRowCount();
414     println("rowCount78 = " + rowCount78);
415
416     // TABLE 79
417     t79 = new Table("Table79.tsv");
418     rowCount79 = t79.getRowCount();
419     println("rowCount79 = " + rowCount79);
420
421     // TABLE 80
422     t80 = new Table("Table80.tsv");
423     rowCount80 = t80.getRowCount();
424     println("rowCount80 = " + rowCount80);
425
426     // TABLE 81
427     t81 = new Table("Table81.tsv");
428     rowCount81 = t81.getRowCount();
429     println("rowCount81 = " + rowCount81);
430
431     // TABLE 82
432     t82 = new Table("Table82.tsv");
433     rowCount82 = t82.getRowCount();
434     println("rowCount82 = " + rowCount82);
435
436     // TABLE 83
437     t83 = new Table("Table83.tsv");
438     rowCount83 = t83.getRowCount();
439     println("rowCount83 = " + rowCount83);
440
441     // TABLE 84
442     t84 = new Table("Table84.tsv");
443     rowCount84 = t84.getRowCount();
444     println("rowCount84 = " + rowCount84);
445
446     // TABLE 85
447     t85 = new Table("Table85.tsv");
448     rowCount85 = t85.getRowCount();
449     println("rowCount85 = " + rowCount85);
450
451     // TABLE 86
452     t86 = new Table("Table86.tsv");
453     rowCount86 = t86.getRowCount();
454     println("rowCount86 = " + rowCount86);
455
456     // TABLE 87
457     t87 = new Table("Table87.tsv");
458     rowCount87 = t87.getRowCount();
459     println("rowCount87 = " + rowCount87);
460
461     // TABLE 88
462     t88 = new Table("Table88.tsv");
463     rowCount88 = t88.getRowCount();
464     println("rowCount88 = " + rowCount88);
465
466     // TABLE 89
467     t89 = new Table("Table89.tsv");
468     rowCount89 = t89.getRowCount();
469     println("rowCount89 = " + rowCount89);
470
471     // TABLE 90
472     t90 = new Table("Table90.tsv");
473     rowCount90 = t90.getRowCount();
474     println("rowCount90 = " + rowCount90);
475
476     // TABLE 91
477     t91 = new Table("Table91.tsv");
478     rowCount91 = t91.getRowCount();
479     println("rowCount91 = " + rowCount91);
480
481     // TABLE 92
482     t92 = new Table("Table92.tsv");
483     rowCount92 = t92.getRowCount();
484     println("rowCount92 = " + rowCount92);
485
486     // TABLE 93
487     t93 = new Table("Table93.tsv");
488     rowCount93 = t93.getRowCount();
489     println("rowCount93 = " + rowCount93);
490
491     // TABLE 94
492     t94 = new Table("Table94.tsv");
493     rowCount94 = t94.getRowCount();
494     println("rowCount94 = " + rowCount94);
495
496     // TABLE 95
497     t95 = new Table("Table95.tsv");
498     rowCount95 = t95.getRowCount();
499     println("rowCount95 = " + rowCount95);
500
501     // TABLE 96
502     t96 = new Table("Table96.tsv");
503     rowCount96 = t96.getRowCount();
504     println("rowCount96 = " + rowCount96);
505
506     // TABLE 97
507     t97 = new Table("Table97.tsv");
508     rowCount97 = t97.getRowCount();
509     println("rowCount97 = " + rowCount97);
510
511     // TABLE 98
512     t98 = new Table("Table98.tsv");
513     rowCount98 = t98.getRowCount();
514     println("rowCount98 = " + rowCount98);
515
516     // TABLE 99
517     t99 = new Table("Table99.tsv");
518     rowCount99 = t99.getRowCount();
519     println("rowCount99 = " + rowCount99);
520
521     // TABLE 100
522     t100 = new Table("Table100.tsv");
523     rowCount100 = t100.getRowCount();
524     println("rowCount100 = " + rowCount100);
525
526     // TABLE 101
527     t101 = new Table("Table101.tsv");
528     rowCount101 = t101.getRowCount();
529     println("rowCount101 = " + rowCount101);
530
531     // TABLE 102
532     t102 = new Table("Table102.tsv");
533     rowCount102 = t102.getRowCount();
534     println("rowCount102 = " + rowCount102);
535
536     // TABLE 103
537     t103 = new Table("Table103.tsv");
538     rowCount103 = t103.getRowCount();
539     println("rowCount103 = " + rowCount103);
540
541     // TABLE 104
542     t104 = new Table("Table104.tsv");
543     rowCount104 = t104.getRowCount();
544     println("rowCount104 = " + rowCount104);
545
546     // TABLE 105
547     t105 = new Table("Table105.tsv");
548     rowCount105 = t105.getRowCount();
549     println("rowCount105 = " + rowCount105);
550
551     // TABLE 106
552     t106 = new Table("Table106.tsv");
553     rowCount106 = t106.getRowCount();
554     println("rowCount106 = " + rowCount106);
555
556     // TABLE 107
557     t107 = new Table("Table107.tsv");
558     rowCount107 = t107.getRowCount();
559     println("rowCount107 = " + rowCount107);
560
561     // TABLE 108
562     t108 = new Table("Table108.tsv");
563     rowCount108 = t108.getRowCount();
564     println("rowCount108 = " + rowCount108);
565
566     // TABLE 109
567     t109 = new Table("Table109.tsv");
568     rowCount109 = t109.getRowCount();
569     println("rowCount109 = " + rowCount109);
570
571     // TABLE 110
572     t110 = new Table("Table110.tsv");
573     rowCount110 = t110.getRowCount();
574     println("rowCount110 = " + rowCount110);
575
576     // TABLE 111
577     t111 = new Table("Table111.tsv");
578     rowCount111 = t111.getRowCount();
579     println("rowCount111 = " + rowCount111);
580
581     // TABLE 112
582     t112 = new Table("Table112.tsv");
583     rowCount112 = t112.getRowCount();
584     println("rowCount112 = " + rowCount112);
585
586     // TABLE 113
587     t113 = new Table("Table113.tsv");
588     rowCount113 = t113.getRowCount();
589     println("rowCount113 = " + rowCount113);
590
591     // TABLE 114
592     t114 = new Table("Table114.tsv");
593     rowCount114 = t114.getRowCount();
594     println("rowCount114 = " + rowCount114);
595
596     // TABLE 115
597     t115 = new Table("Table115.tsv");
598     rowCount115 = t115.getRowCount();
599     println("rowCount115 = " + rowCount115);
600
601     // TABLE 116
602     t116 = new Table("Table116.tsv");
603     rowCount116 = t116.getRowCount();
604     println("rowCount116 = " + rowCount116);
605
606     // TABLE 117
607     t117 = new Table("Table117.tsv");
608     rowCount117 = t117.getRowCount();
609     println("rowCount117 = " + rowCount117);
610
611     // TABLE 118
612     t118 = new Table("Table118.tsv");
613     rowCount118 = t118.getRowCount();
614     println("rowCount118 = " + rowCount118);
615
616     // TABLE 119
617     t119 = new Table("Table119.tsv");
618     rowCount119 = t119.getRowCount();
619     println("rowCount119 = " + rowCount119);
620
621     // TABLE 120
622     t120 = new Table("Table120.tsv");
623     rowCount120 = t120.getRowCount();
624     println("rowCount120 = " + rowCount120);
625
626     // TABLE 121
627     t121 = new Table("Table121.tsv");
628     rowCount121 = t121.getRowCount();
629     println("rowCount121 = " + rowCount121);
630
631     // TABLE 122
632     t122 = new Table("Table122.tsv");
633     rowCount122 = t122.getRowCount();
634     println("rowCount122 = " + rowCount122);
635
636     // TABLE 123
637     t123 = new Table("Table123.tsv");
638     rowCount123 = t123.getRowCount();
639     println("rowCount123 = " + rowCount123);
640
641     // TABLE 124
642     t124 = new Table("Table124.tsv");
643     rowCount124 = t124.getRowCount();
644     println("rowCount124 = " + rowCount124);
645
646     // TABLE 125
647     t125 = new Table("Table125.tsv");
648     rowCount125 = t125.getRowCount();
649     println("rowCount125 = " + rowCount125);
650
651     // TABLE 126
652     t126 = new Table("Table126.tsv");
653     rowCount126 = t126.getRowCount();
654     println("rowCount126 = " + rowCount126);
655
656     // TABLE 127
657     t127 = new Table("Table127.tsv");
658     rowCount127 = t127.getRowCount();
659     println("rowCount127 = " + rowCount127);
660
661     // TABLE 128
662     t128 = new Table("Table128.tsv");
663     rowCount128 = t128.getRowCount();
664     println("rowCount128 = " + rowCount128);
665
666     // TABLE 129
667     t129 = new Table("Table129.tsv");
668     rowCount129 = t129.getRowCount();
669     println("rowCount129 = " + rowCount129);
670
671     // TABLE 130
672     t130 = new Table("Table130.tsv");
673     rowCount130 = t130.getRowCount();
674     println("rowCount130 = " + rowCount130);
675
676     // TABLE 131
677     t131 = new Table("Table131.tsv");
678     rowCount131 = t131.getRowCount();
679     println("rowCount131 = " + rowCount131);
680
681     // TABLE 132
682     t132 = new Table("Table132.tsv");
683     rowCount132 = t132.getRowCount();
684     println("rowCount132 = " + rowCount132);
685
686     // TABLE 133
687     t133 = new Table("Table133.tsv");
688     rowCount133 = t133.getRowCount();
689     println("rowCount133 = " + rowCount133);
690
691     // TABLE 134
692     t134 = new Table("Table134.tsv");
693     rowCount134 = t134.getRowCount();
694     println("rowCount134 = " + rowCount134);
695
696     // TABLE 135
697     t135 = new Table("Table135.tsv");
698     rowCount135 = t135.getRowCount();
699     println("rowCount135 = " + rowCount135);
700
701     // TABLE 136
702     t136 = new Table("Table136.tsv");
703     rowCount136 = t136.getRowCount();
704     println("rowCount136 = " + rowCount136);
705
706     // TABLE 137
707     t137 = new Table("Table137.tsv");
708     rowCount137 = t137.getRowCount();
709     println("rowCount137 = " + rowCount137);
710
711     // TABLE 138
712     t138 = new Table("Table138.tsv");
713     rowCount138 = t138.getRowCount();
714     println("rowCount138 = " + rowCount138);
715
716     // TABLE 139
717     t139 = new Table("Table139.tsv");
718     rowCount139 = t139.getRowCount();
719     println("rowCount139 = " + rowCount139);
720
721     // TABLE 140
722     t140 = new Table("Table140.tsv");
723     rowCount140 = t140.getRowCount();
724     println("rowCount140 = " + rowCount140);
725
726     // TABLE 141
727     t141 = new Table("Table141.tsv");
728     rowCount141 = t141.getRowCount();
729     println("rowCount141 = " + rowCount141);
730
731     // TABLE 142
732     t142 = new Table("Table142.tsv");
733     rowCount142 = t142.getRowCount();
734     println("rowCount142 = " + rowCount142);
735
736     // TABLE 143
737     t143 = new Table("Table143.tsv");
738     rowCount143 = t143.getRowCount();
739     println("rowCount143 = " + rowCount143);
740
741     // TABLE 144
742     t144 = new Table("Table144.tsv");
743     rowCount144 = t144.getRowCount();
744     println("rowCount144 = " + rowCount144);
745
746     // TABLE 145
747     t145 = new Table("Table145.tsv");
748     rowCount145 = t145.getRowCount();
749     println("rowCount145 = " + rowCount145);
750
751     // TABLE 146
752     t146 = new Table("Table146.tsv");
753     rowCount146 = t146.getRowCount();
754     println("rowCount146 = " + rowCount146);
755
756     // TABLE 147
757     t147 = new Table("Table147.tsv");
758     rowCount147 = t147.getRowCount();
759     println("rowCount147 = " + rowCount147);
760
761     // TABLE 148
762     t148 = new Table("Table148.tsv");
763     rowCount148 = t148.getRowCount();
764     println("rowCount148 = " + rowCount148);
765
766     // TABLE 149
767     t149 = new Table("Table149.tsv");
768     rowCount149 = t149.getRowCount();
769     println("rowCount149 = " + rowCount149);
770
771     // TABLE 150
772     t150 = new Table("Table150.tsv");
773     rowCount150 = t150.getRowCount();
774     println("rowCount150 = " + rowCount150);
775
776     // TABLE 151
777     t151 = new Table("Table151.tsv");
778     rowCount151 = t151.getRowCount();
779     println("rowCount151 = " + rowCount151);
780
781     // TABLE 152
782     t152 = new Table("Table152.tsv");
783     rowCount152 = t152.getRowCount();
784     println("rowCount152 = " + rowCount152);
785
786     // TABLE 153
787     t153 = new Table("Table153.tsv");
788     rowCount153 = t153.getRowCount();
789     println("rowCount153 = " + rowCount153);
790
791     // TABLE 154
792     t154 = new Table("Table154.tsv");
793     rowCount154 = t154.getRowCount();
794     println("rowCount154 = " + rowCount154);
795
796     // TABLE 155
797     t155 = new Table("Table155.tsv");
798     rowCount155 = t155.getRowCount();
799     println("rowCount155 = " + rowCount155);
800
801     // TABLE 156
802     t156 = new Table("Table156.tsv");
803     rowCount156 = t156.getRowCount();
804     println("rowCount156 = " + rowCount156);
805
806     // TABLE 157
807     t157 = new Table("Table157.tsv");
808     rowCount157 = t157.getRowCount();
809     println("rowCount157 = " + rowCount157);
810
811     // TABLE 158
812     t158 = new Table("Table158.tsv");
813     rowCount158 = t158.getRowCount();
814     println("rowCount158 = " + rowCount158);
815
816     // TABLE 159
817     t159 = new Table("Table159.tsv");
818     rowCount159 = t159.getRowCount();
819     println("rowCount159 = " + rowCount159);
820
821     // TABLE 160
822     t160 = new Table("Table160.tsv");
823     rowCount160 = t160.getRowCount();
824     println("rowCount160 = " + rowCount160);
825
826     // TABLE 161
827     t161 = new Table("Table161.tsv");
828     rowCount161 = t161.getRowCount();
829     println("rowCount161 = " + rowCount161);
830
831     // TABLE 162
832     t162 = new Table("Table162.tsv");
833     rowCount162 = t162.getRowCount();
834     println("rowCount162 = " + rowCount162);
835
836     // TABLE 163
837     t163 = new Table("Table163.tsv");
838     rowCount163 = t163.getRowCount();
839     println("rowCount163 = " + rowCount163);
840
841     // TABLE 164
842     t164 = new Table("Table164.tsv");
843     rowCount164 = t164.getRowCount();
844     println("rowCount164 = " + rowCount164);
845
846     // TABLE 165
847     t165 = new Table("Table165.tsv");
848     rowCount165 = t165.getRowCount();
849     println("rowCount165 = " + rowCount165);
850
851     // TABLE 166
852     t166 = new Table("Table166.tsv");
853     rowCount166 = t166.getRowCount();
854     println("rowCount166 = " + rowCount166);
855
856     // TABLE 167
857     t167 = new Table("Table167.tsv");
858     rowCount167 = t167.getRowCount();
859     println("rowCount167 = " + rowCount167);
860
861     // TABLE 168
862     t168 = new Table("Table168.tsv");
863     rowCount168 = t168.getRowCount();
864     println("rowCount168 = " + rowCount168);
865
866     // TABLE 169
867     t169 = new Table("Table169.tsv");
868     rowCount169 = t169.getRowCount();
869     println("rowCount169 = " + rowCount169);
870
871     // TABLE 170
872     t170 = new Table("Table170.tsv");
873     rowCount170 = t170.getRowCount();
874     println("rowCount170 = " + rowCount170);
875
876     // TABLE 171
877     t171 = new Table("Table171.tsv");
878     rowCount171 = t171.getRowCount();
879     println("rowCount171 = " + rowCount171);
880
881     // TABLE 172
882     t172 = new Table("Table172.tsv");
883     rowCount172 = t172.getRowCount();
884     println("rowCount172 = " + rowCount172);
885
886     // TABLE 173
887     t173 = new Table("Table173.tsv");
888     rowCount173 = t173.getRowCount();
889     println("rowCount173 = " + rowCount173);
890
891     // TABLE 174
892     t174 = new Table("Table174.tsv");
893     rowCount174 = t174.getRowCount();
894     println("rowCount174 = " + rowCount174);
895
896     // TABLE 175
897     t175 = new Table("Table175.tsv");
898     rowCount175 = t175.getRowCount();
899     println("rowCount175 = " + rowCount175);
900
901     // TABLE 176
902     t176 = new Table("Table176.tsv");
903     rowCount176 = t176.getRowCount();
904     println("rowCount176 = " + rowCount176);
905
906     // TABLE 177
907     t177 = new Table("Table177.tsv");
908     rowCount177 = t177.getRowCount();
909     println("rowCount177 = " + rowCount177);
910
911     // TABLE 178
912     t178 = new Table("Table178.tsv");
913     rowCount178 = t178.getRowCount();
914     println("rowCount178 = " + rowCount178);
915
916     // TABLE 179
917     t179 = new Table("Table179.tsv");
918     rowCount179 = t179.getRowCount();
919     println("rowCount179 = " + rowCount179);
920
921     // TABLE 180
922     t180 = new Table("Table180.tsv");
923     rowCount180 = t180.getRowCount();
924     println("rowCount180 = " + rowCount180);
925
926     // TABLE 181
927     t181 = new Table("Table181.tsv");
928     rowCount181 = t181.getRowCount();
929     println("rowCount181 = " + rowCount181);
930
931     // TABLE 182
932     t182 = new Table("Table182.tsv");
933     rowCount182 = t182.getRowCount();
934     println("rowCount182 = " + rowCount182);
935
936     // TABLE 183
937     t183 = new Table("Table183.tsv");
938     rowCount183 = t183.getRowCount();
939     println("rowCount183 = " + rowCount183);
940
941     // TABLE 184
942     t184 = new Table("Table184.tsv");
943     rowCount184 = t184.getRowCount();
944     println("rowCount184 = " + rowCount184);
945
946     // TABLE 185
947     t185 = new Table
```



```

33 rowCount2 = t2.getRowCount();
34 println("rowCount2 = " + rowCount2);
35
36 // TABLE 3
37 t3 = new Table("Last2.tsv");
38 rowCount3 = t3.getRowCount();
39 println("rowCount3 = " + rowCount3);
40
41 //stroke(255);
42 frameRate(2.6);
43 }
44 /*****
45 *****/
46 int x = 300;
47 int y = 70;
48
49 void draw(){
50   background(0); // Clear the screen with a black background
51   line(0, YY, width/2, YY);
52   line(YY, 333, width/3, YY);
53
54   for (int i = 0; i < width; i++) {
55     float r = random(255);
56     stroke(r);
57     line(i, 0, i, height);
58   }
59
60   textSize(50);
61   textAlign(CENTER);
62   fill(palette[1]);
63   text("To reveal the data, press your mouse",width/2,y);
64   y = y + 100;
65
66 }

```

```

66 }
67 void mousePressed(){
68
69   fill(fillVal);
70   rect(25, 25, 50, 50);
71
72   stroke (45);
73   ellipse(200,200,50,50);
74   rect(700,700,40,40);
75
76   background (palette[0]);
77
78   /***** TABLE 1 *****/
79   //Aesthetics
80   stroke (palette[3]);
81   fill (palette[3]);
82   textAlign(CENTER);
83   textSize(20);
84   text("World Wide R.E Production Percentage", width/4, 100);
85
86   //DRAW CARTESIAN PLANE
87   //x Axis
88   stroke (3);
89   textAlign (CENTER);
90   line (100, 400, 890, 400);
91   text ("Years", 450, 445);
92   //Y Axis
93   stroke (3);
94   textAlign (RIGHT);
95   textSize(15);
96   line (100, 50, 100, 400);
97   text("Percentage", 90, 250);
98
99   //READ DATA FROM TABLE 1

```

```

99 //READ DATA FROM TABLE 1
100 //Non Dynamic to Dynamic data variables
101 int Width = 120;
102 int th = 420;
103
104 //Get the Data
105 for (int row = 0; row < rowCount; row++){
106     String dates = t1.getString(row, 0);
107     float height = t1.getFloat(row, 1);
108     String H = t1.getString(row, 1);
109     println(dates + " " + height);
110     height = height*10.9; // since my data values are so close from each other, I'm increasing their distance ratio
111     //Draw the Data
112     ellipseMode (CENTER);
113     fill (palette[1]);
114     stroke (12);
115     ellipse (Width, (height - (height*2))+600, 9, 15); // math formula to be able to place the values in the right position
116
117     textAlign(CENTER);
118     textSize(10);
119     text (dates, Width, th);
120     textSize(10);
121     text (H, Width, ((height - (height*2))+600)-17 ); // same as above
122
123     Width = Width + 30; //Re-declaring the variable Width, so it can space out my shapes from each other
124 }
125 /***** TABLE 2 *****/
126 //Aesthetics
127 stroke (palette[3]);
128 fill (palette[3]);
129 textAlign (CENTER);
130 textSize(20);
131 text("G7 Comparison: Year 2015", width/4, 570);
132

```

```

132
133 //DRAW CARTESIAN PLANE
134 // X Axis
135 stroke (3);
136 textAlign (CENTER);
137 line (100, 800, 860, 800);
138 // Y Axis
139 stroke (3);
140 textAlign (RIGHT);
141 textSize (15);
142 line (100, 800, 100, 590);
143 text("Percentage", 90, 710);
144
145 //GET DATA FROM TABLE 2
146 //non dynamic to dynamic variables
147 int x = 150;
148
149 //Get Data
150 for (int row = 0; row < rowCount2; row++){
151     String dates = t2.getString(row, 0);
152     float height = t2.getFloat(row, 1);
153     String H = t2.getString(row, 1);
154     println (dates + " " + height);
155
156     //variables needed to draw
157     int y = 800;
158     int width = 80;
159
160     // Draw the data
161     rect(x, y, width, height-(height*2));
162     /*the subtraction from the line above what it does it to position the rectangle
163     in a regular postion. Computer coordinates are a 4th plane of a cartesian coordinate
164     so the calculation above translate the rectangle from being on a 4th plane to 1st plane*/
165     textSize(20);

```

```

164     so the calculation above translate the rectangle from bei
165     textSize(20);
166     text(dates, x+50, 840);
167     text(H, x+50, 720);
168     x = x + 100; // increase the spacing of the graphs
169 }
170
171 /***** TABLE 2 *****/
172 //Draw Cartesian Lines
173 line (1000, 704, 1600, 704);
174 line (1000, 704, 1000, 300);
175
176 //GET DATA FOR TABLE THREE
177 // non dynamic to dynamic variables
178 int xx = 1050;
179 int X = 1100;
180
181 //Get Data
182 for (int row = 0; row < rowCount3; row++){
183     String continent = t3.getString(row, 0);
184     float height = t3.getFloat(row, 1); //2015
185     String H = t3.getString(row, 1); //2015
186     String H2 = t3.getString(row, 2); //2000
187     String H3 = t3.getString(row, 3); //1990
188     float height2 = t3.getFloat(row, 2); //2000
189     float height3 = t3.getFloat(row, 3); //1990
190
191     //recalculate numbers to be able to display in this grid
192     height = height /1000;
193     height2 = height2 /1000;
194     height3 = height3 /1000;
195
196     println(continent + " " + H + " " + H2 + " " + H3);
197

```

```

198     //DRAW DATA
199     //static to dynamic values to draw the data
200     int yy = 700;
201     int width = 80;
202     //2015
203     fill(#ff8f00);
204     rect(xx, yy, width, height-(height*2));
205     //2000
206     fill(#2b3a42);
207     rect(xx, yy, width, height2-(height2*2)); // math formula to position rectangles in the right spot
208     //1990
209     fill(#f0f0df);
210     rect(xx, yy, width, height3-(height3*2));
211     xx = xx +100; //increase the spacing of the graphs
212     //add labels to the graphs
213     //continent
214     textAlign(CENTER);
215     textSize(12);
216     text(continent, X, yy+20);
217     //2015
218     fill(#ff8f00);
219     textSize(20);
220     text(H,X,yy-390);
221     //2000
222     fill(#2b3A42);
223     text(H2,X,yy-370);
224     //1990
225     fill(#f0f0df);
226     text(H3,X,yy-350);
227     X = X+100; // adds spacing to the text
228
229     //add the years manually because theyre not provided in my data file
230     fill(#f0f0df);
231     text("1990" 1200 780);

```

```
231     fill(#2b3a42);
232     text("2000",1300,780);
233     fill(#ff8f00);
234     text("2015", 1400, 780);
235     // add label because it was not provided in data file
236     fill(palette[3]);
237     text("Electricity Supply Per Continent", 1300, 200);
238 }
239 noLoop(); // this will make the void Draw() function only run once
240
241 }
242
243 /*
244 void keyPressed(){
245     if (key == CODED) {
246         if (keyCode == UP) {
247             fillVal = 255;
248         } else if (keyCode == DOWN) {
249             fillVal = 0;
250         }
251     } else {
252         fillVal = 126;
253     }
254 }
255 }
256 */
```