```
-------------CASE OF INSERTING INTO ROOT WITH NO SPLITTING -----------

Test1: CASE OF EMPTY TREE

Pre:


*Inserting 10


Post:

        10

Test2: CASE OF ROOT WITH SINGLE ITEM

Pre:

        10

*Inserting 30


Post:

        10 30

Test3: CASE OF ROOT WITH TWO ITEMS

Pre:

        10 30

*Inserting 60


Post:

        10 30 60

Test4: CASE OF INSERTING SAME ITEMS, BUT IN THE ORDER: 10,60,30

Pre:


*Inserting 10,60,30


Post:

        10 30 60

Test5: CASE OF INSERTING SAME ITEMS, BUT IN THE ORDER: 30,10,60

Pre:


*Inserting 30,10,60


Post:

        10 30 60
```

```
 70    Test6: CASE OF INSERTING SAME ITEMS, BUT IN THE ORDER: 30,60,10
 71
 72    Pre:
 73
 74
 75    *Inserting 30,60,10
 76
 77
 78    Post:
 79
 80            10 30 60
 81
 82    Test7: CASE OF INSERTING SAME ITEMS, BUT IN THE ORDER: 60,10,30
 83
 84    Pre:
 85
 86
 87    *Inserting 60,10,30
 88
 89
 90    Post:
 91
 92            10 30 60
 93
 94    -------------CASE OF ROOT NODE SPLITTING -----------
 95
 96    Test1: CASE OF ADDING TO LEFT SIDE, RIGHT SPOT
 97
 98    Pre:
 99
100            10 30 60
101
102    *Inserting 20
103
104
105    Post:
106
107                    60
108            30
109                    10 20
110
111    Test2: CASE OF ADDING TO LEFT SIDE, LEFT SPOT
112
113    Pre:
114
115            10 30 60
116
117    *Inserting 5
118
119
120    Post:
121
122                    60
123            30
124                    5 10
125
126    Test3: CASE OF ADDING TO RIGHT SIDE, LEFT SPOT
127
128    Pre:
129
130            10 30 60
131
132    *Inserting 50
133
134
135
136
137
138
```

```
139
140    Post:
141
142                    50 60
143         30
144                    10
145
146    Test4: CASE OF ADDING TO RIGHT SIDE, RIGHT SPOT
147
148    Pre:
149
150         10 30 60
151
152    *Inserting 70
153
154
155    Post:
156
157                    60 70
158         30
159                    10
160
161    -------------CASE OF ADDING TO A LEVEL 2 NODE -----------
162
163    Test1: CASE OF ADDING TO RIGHT SIDE
164
165    Pre:
166
167                    60
168         30
169                    10 20
170
171    *Inserting 40
172
173
174    Post:
175
176                    40 60
177         30
178                    10 20
179
180    Test2: CASE OF ADDING TO A NODE THAT MAKES IT FULL
181
182    Pre:
183
184                    40 60
185         30
186                    10 20
187
188    *Inserting 70
189
190
191    Post:
192
193                    40 60 70
194         30
195                    10 20
196
197    Test3: CASE OF ADDING TO LEFT SIDE
198
199    Pre:
200
201                    60
202         30
203                    10 20
204
205    *Inserting 25
206
207
```

```
208    Post:
209
210                    60
211          30
212                    10 20 25
213
214    -------------CASE OF SPLITTING A LEVEL 2 NODE -----------
215
216    Test1: CASE OF ADDING INTO NEW RIGHT NODE
217
218    Pre:
219
220                    40 50 60
221          30
222                    10 20
223
224    *Inserting 70
225
226
227    Post:
228
229                    60 70
230          30 50
231                    40
232                    10 20
233
234    Test2: CASE OF SPLITTING A RIGHT NODE AND THE ITEM GOES INTO MIDDLE
235
236    Pre:
237
238                    40 50 60
239          30
240                    10 20
241
242    *Inserting 45
243
244
245    Post:
246
247                    60
248          30 50
249                    40 45
250                    10 20
251
252    Test3: CASE OF SPLITTING A LEFT NODE
253
254    Pre:
255
256                    60
257          30
258                    10 20 25
259
260    *Inserting 15
261
262
263    Post:
264
265                    60
266          20 30
267                    25
268                    10 15
269
270    Test4: CASE OF SPLITTING A LEFT NODE AND NEW ITEM GOES INTO MIDDLE
271
272    Pre:
273
274                    60
275          30
276                    10 20 25
```

```
277
278    *Inserting 27
279
280
281    Post:
282
283                    60
284          20 30
285                    25 27
286                    10
287
288    -------------ADDING TO A LEVEL 2 NODE AFTER A SPLIT -----------
289
290    Test1: CASE OF ADDING INTO NEW RIGHT NODE
291
292    Pre:
293
294                    60 70
295          30 50
296                    40
297                    10 20
298
299    *Inserting 80
300
301
302    Post:
303
304                    60 70 80
305          30 50
306                    40
307                    10 20
308
309    Test2: CASE OF ADDING INTO LEFT NODE
310
311    Pre:
312
313                    60 70 80
314          30 50
315                    40
316                    10 20
317
318    *Inserting 25
319
320
321    Post:
322
323                    60 70 80
324          30 50
325                    40
326                    10 20 25
327
328    -------------SPLITTING A LEVEL 2 NODE TO MAKE 4 CHILDREN -----------
329
330    Test1: CASE OF SPLITTING RIGHT NODE
331
332    Pre:
333
334                    60 70 80
335          30 50
336                    40
337                    10 20
338
339    *Inserting 95
340
341
342
343
344
345
```

```
Post:

                80 95
                60
        30 50 70
                40
                10 20

Test2: CASE OF SPLITTING LEFT NODE

Pre:

                60 70
        30 50
                40
                10 15 20

*Inserting 13


Post:

                60 70
                40
        15 30 50
                20
                10 13
```