

# STACK ANALYSIS – TEAM 11

# Team 11 – Stack Analysis

For simplicity, arrows on the call graph (next page) were only drawn for the function with the worst case stack usage (it got messy otherwise). LIC1() had the largest possible stack usage with LICK13() in a close second place. This is likely due to code structure which is now visible with the caller graph.

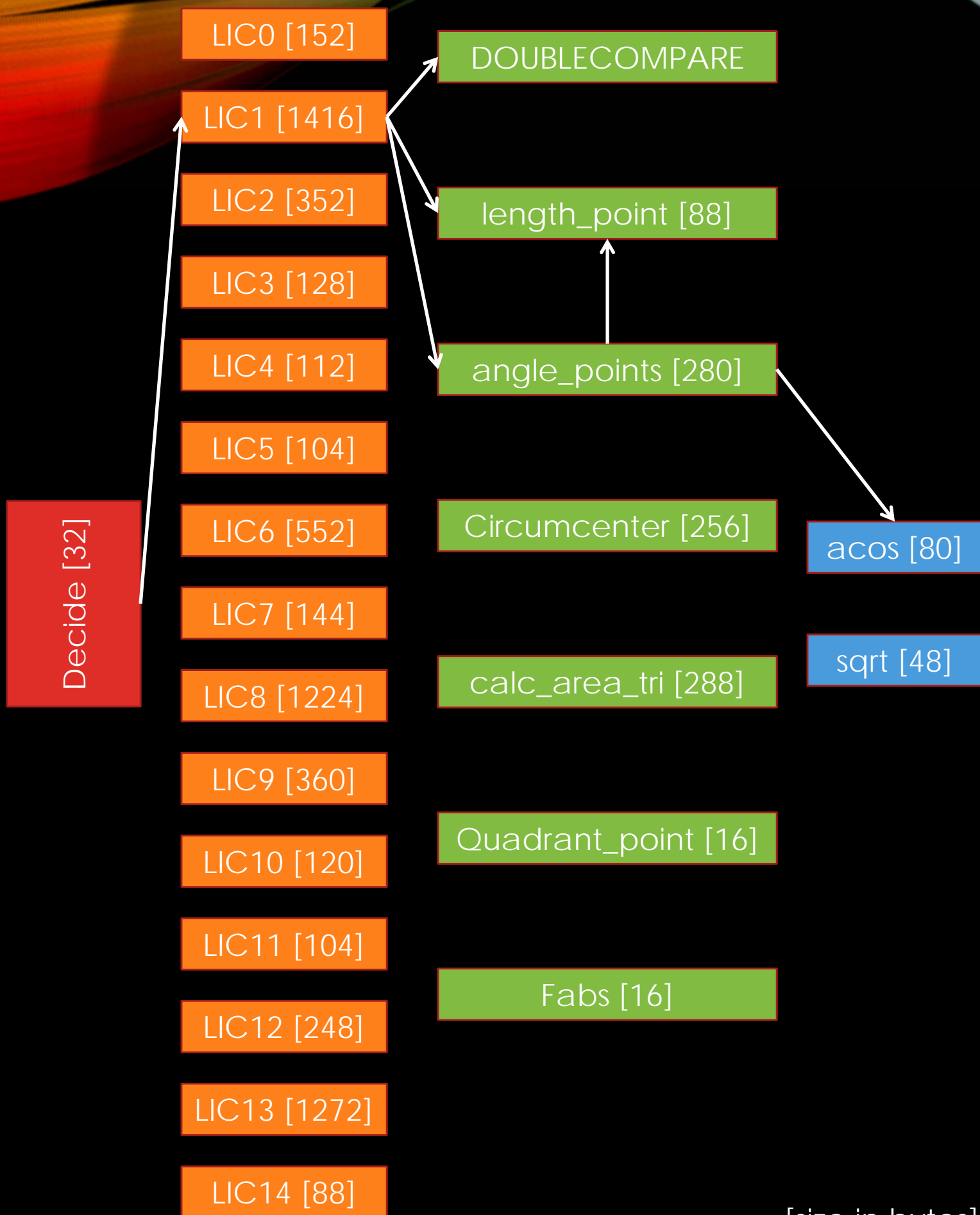
DOUBLECOMPARE was inlined and it's byte count was included in its callers. It's also important to note that for each call (arrow in the graph) there is an additional 8 bytes that could be pushed onto the stack.

The **worst case** path looks like this:

`decide() → LIC1() → angle_points() → length_point()`

For a total of  $32 + 8 + 1416 + 8 + 280 + 88 = 1832$  bytes

The totals were calculated from both adding up the stack usage found in the output assembly (.s) and also using the gcc `fstack-usage` flag. The call graph was verified using `cflow`.



[size in bytes]

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## Sorted Stack Usage

LIC1	1416
LIC13	1272
LIC8	1224
LIC6	552
LIC9	360
LIC2	352
Calculate_Area_Triangle	288
angle_points	280
circumcenter	256
LIC12	248
LIC0	152
LIC7	144
LIC3	128
LIC10	120
LIC4	112
LIC11	104
LIC5	104
length_point	88
LIC14	88
DECIDE	32
Quadrant_point	16

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```
+--DECIDE()  
  +-LIC0()  
    | +-DOUBLECOMPARE()  
    | \-length_point()  
  +-LIC1()  
    | +-DOUBLECOMPARE()  
    | +-length_point()  
    | +-angle_points()  
    | | +-length_point()  
    | | \-acos()  
    | \-circumcenter()  
    |   +-length_point()  
    |   \-Calculate_Area_Triangle()  
  +-LIC2()  
    | +-DOUBLECOMPARE()  
    | \-angle_points()  
  +-LIC3()  
    | +-Calculate_Area_Triangle()  
    | \-DOUBLECOMPARE()  
  +-LIC4()  
    | \-Quadrant_point()  
  +-LIC5()  
    | \-DOUBLECOMPARE()  
  +-LIC6()  
    | +-DOUBLECOMPARE()  
    | +-length_point()  
    | +-fabs()  
    | \-sqrt()  
  +-LIC7()  
    | +-length_point()  
    | \-DOUBLECOMPARE()  
  +-LIC8()  
    | +-DOUBLECOMPARE()  
    | +-length_point()  
    | +-angle_points()  
    | \-circumcenter()  
  +-LIC9()  
    | +-DOUBLECOMPARE()  
    | \-angle_points()  
  +-LIC10()  
    | +-Calculate_Area_Triangle()  
    | \-DOUBLECOMPARE()  
  +-LIC11()  
    | \-DOUBLECOMPARE()  
  +-LIC12()  
    | +-length_point()  
    | \-DOUBLECOMPARE()  
  +-LIC13()  
    | +-DOUBLECOMPARE()  
    | +-length_point()  
    | +-angle_points()  
    | \-circumcenter()  
  +-LIC14()  
    +-Calculate_Area_Triangle()  
    \-DOUBLECOMPARE()
```