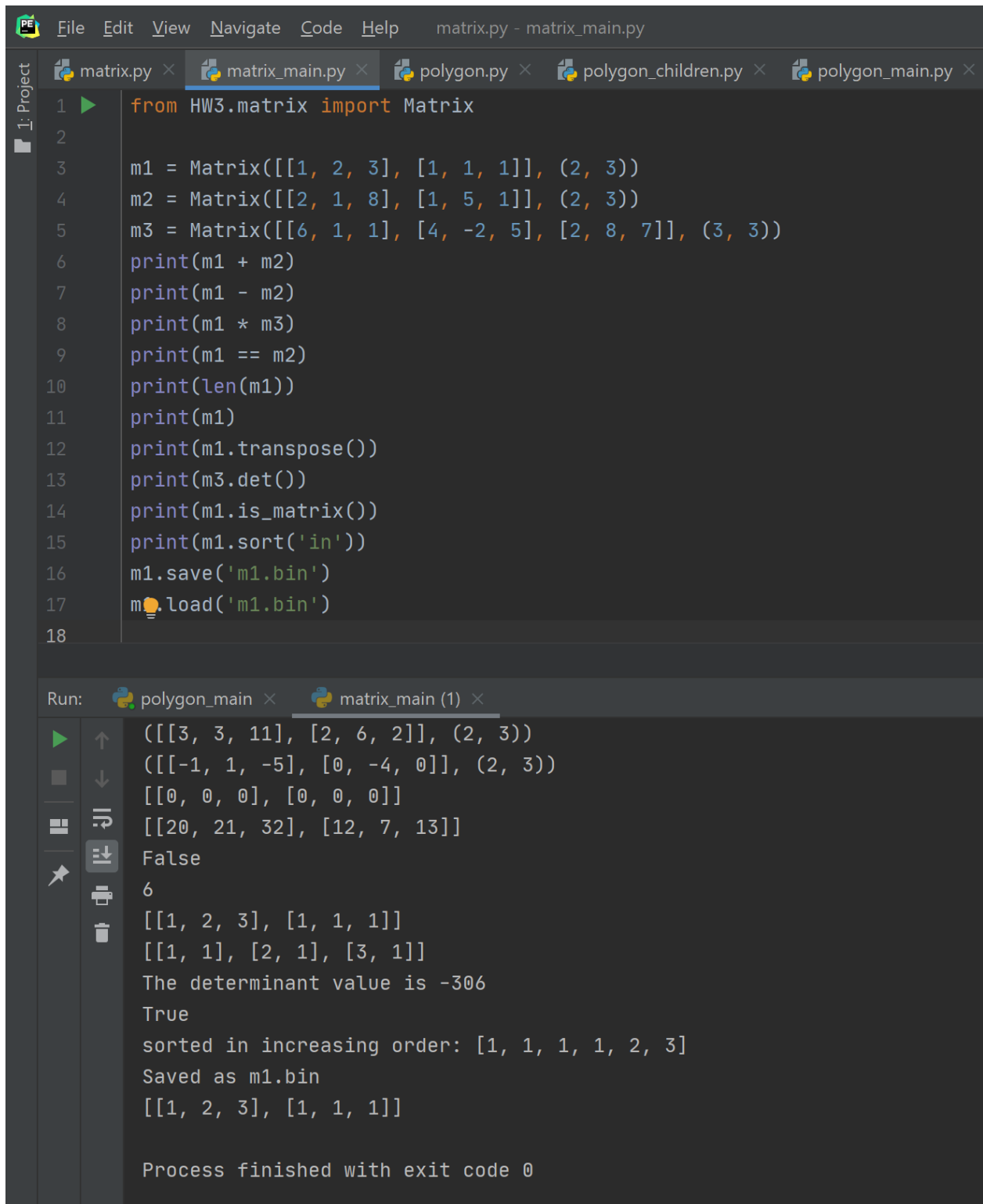


Problem 1 outputs



The image shows a Python IDE with a dark theme. The top toolbar includes icons for File, Edit, View, Navigate, Code, and Help. The title bar indicates the active file is 'matrix.py - matrix_main.py'. The editor has several tabs open: 'matrix.py', 'matrix_main.py' (active), 'polygon.py', 'polygon_children.py', and 'polygon_main.py'. The code in 'matrix_main.py' is as follows:

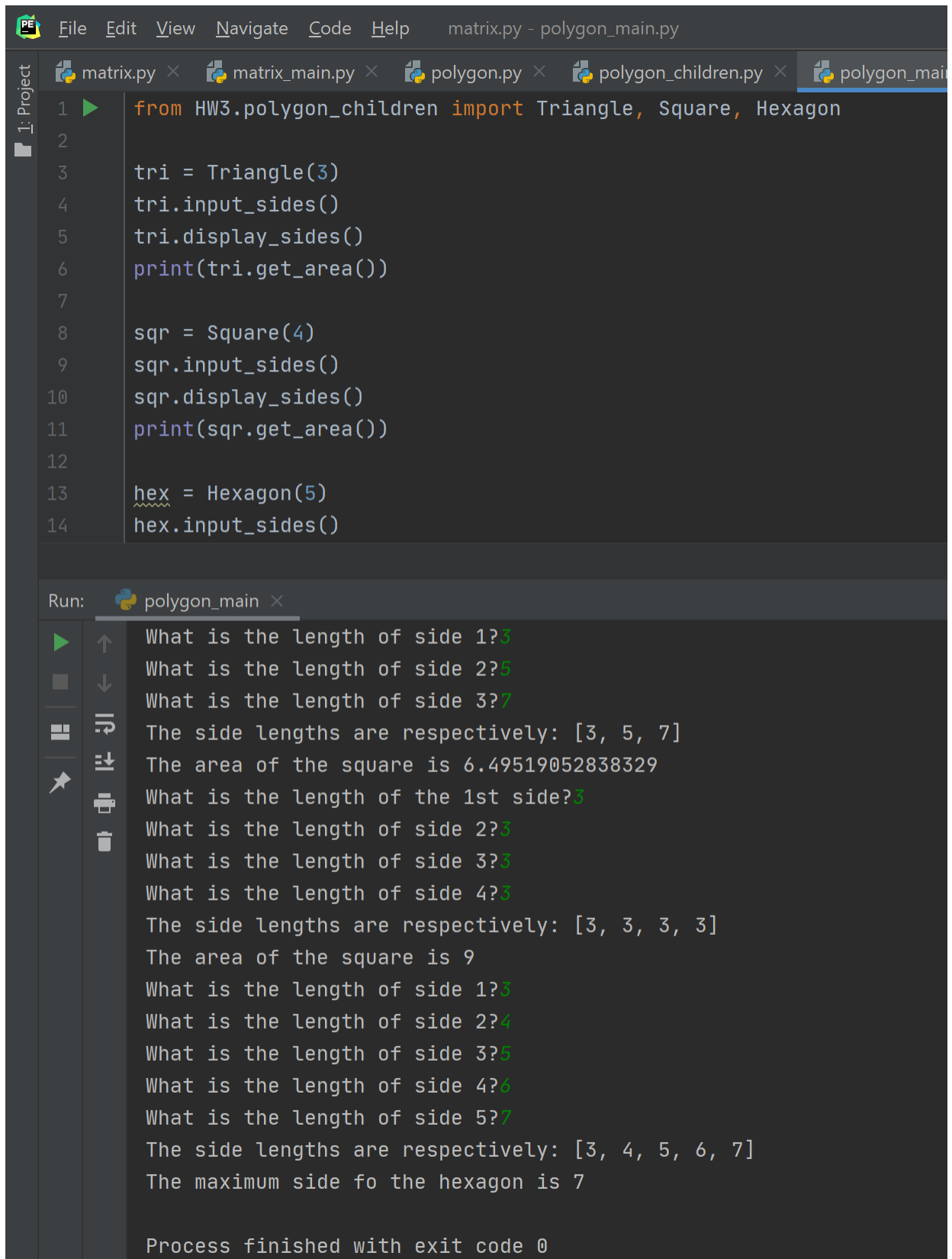
```
1 from HW3.matrix import Matrix
2
3 m1 = Matrix([[1, 2, 3], [1, 1, 1]], (2, 3))
4 m2 = Matrix([[2, 1, 8], [1, 5, 1]], (2, 3))
5 m3 = Matrix([[6, 1, 1], [4, -2, 5], [2, 8, 7]], (3, 3))
6 print(m1 + m2)
7 print(m1 - m2)
8 print(m1 * m3)
9 print(m1 == m2)
10 print(len(m1))
11 print(m1)
12 print(m1.transpose())
13 print(m3.det())
14 print(m1.is_matrix())
15 print(m1.sort('in'))
16 m1.save('m1.bin')
17 m1.load('m1.bin')
18
```

Below the editor is a 'Run' panel with tabs for 'polygon_main' and 'matrix_main (1)'. The output of the 'matrix_main (1)' run is displayed in the console:

```
[[3, 3, 11], [2, 6, 2]], (2, 3))
[[-1, 1, -5], [0, -4, 0]], (2, 3))
[[0, 0, 0], [0, 0, 0]]
[[20, 21, 32], [12, 7, 13]]
False
6
[[1, 2, 3], [1, 1, 1]]
[[1, 1], [2, 1], [3, 1]]
The determinant value is -306
True
sorted in increasing order: [1, 1, 1, 1, 2, 3]
Saved as m1.bin
[[1, 2, 3], [1, 1, 1]]

Process finished with exit code 0
```

Problem 2 outputs



The screenshot shows a Python IDE with a dark theme. The top toolbar includes File, Edit, View, Navigate, Code, and Help. The title bar indicates the file is 'matrix.py - polygon_main.py'. The editor has several tabs: 'matrix.py', 'matrix_main.py', 'polygon.py', 'polygon_children.py', and 'polygon_main.py'. The 'polygon_main.py' tab is active, showing the following code:

```
1 from HW3.polygon_children import Triangle, Square, Hexagon
2
3 tri = Triangle(3)
4 tri.input_sides()
5 tri.display_sides()
6 print(tri.get_area())
7
8 sqr = Square(4)
9 sqr.input_sides()
10 sqr.display_sides()
11 print(sqr.get_area())
12
13 hex = Hexagon(5)
14 hex.input_sides()
```

Below the editor is a 'Run' panel with a tab for 'polygon_main'. It shows the output of the program, which includes prompts for side lengths, the resulting side length lists, and the calculated areas for a triangle, a square, and a hexagon. The output ends with 'Process finished with exit code 0'.

```
Run: polygon_main
What is the length of side 1?3
What is the length of side 2?5
What is the length of side 3?7
The side lengths are respectively: [3, 5, 7]
The area of the square is 6.49519052838329
What is the length of the 1st side?3
What is the length of side 2?3
What is the length of side 3?3
What is the length of side 4?3
The side lengths are respectively: [3, 3, 3, 3]
The area of the square is 9
What is the length of side 1?3
What is the length of side 2?4
What is the length of side 3?5
What is the length of side 4?6
What is the length of side 5?7
The side lengths are respectively: [3, 4, 5, 6, 7]
The maximum side fo the hexagon is 7

Process finished with exit code 0
```