Assignment 2: Algorithmic Complexity

1. Implement the Insertion sort in the following function:

```
1  def insertion_sort(xs: list) -> None:
```

2. Analyze the complexity of the sort using the `analyze_collect` and function:

   (a) for a random input
   (b) and for an already sorted list.

3. Show the results of the analysis using the `analyze_show` function. Include a polynomial estimate in the charts (use the `np.polyfit` function with `deg=2` for the input (a) and with `deg=1` for the input (b)). An example of the output can be seen in Fig. 1

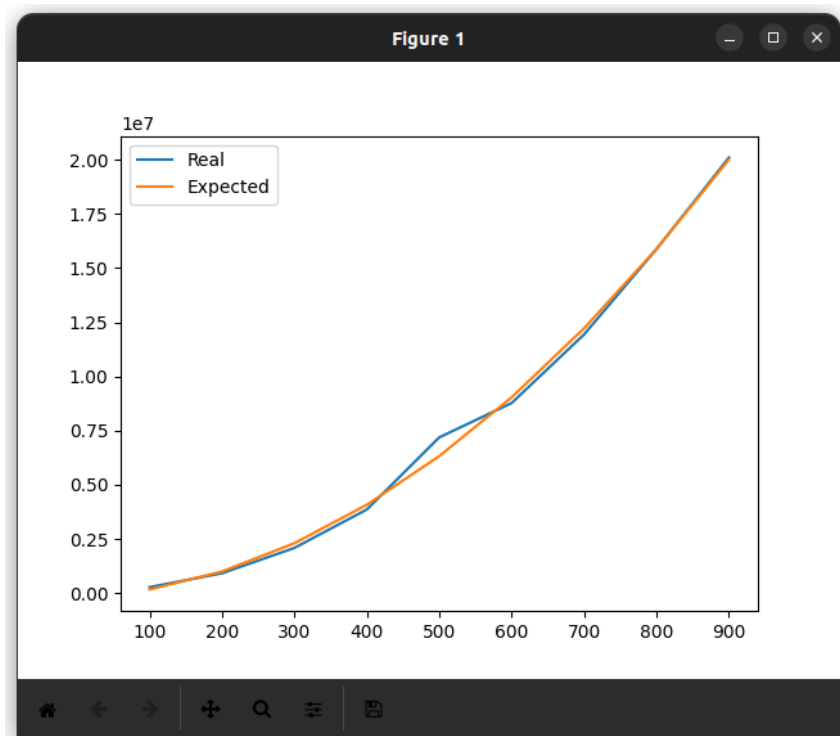4. **Optional task:** Adjust the `analyze_collect` function so that you can use it to analyze multiple sorting algorithms on various inputs.

Fig. 1: Example of the output