1 Experimental Studies

General patern:

- Write a program implementing the algorithm
- Run the program with inputs of "varying size and composition"
- Use a system method to get an (in)accurate measure of the actual running time
- Plot the results
- Intterpret & analyse

2 Limitations of Experiments

- It is necessary to implement the algorithm, which may be difficult or time consuming
- Results may not be indicative of the running time on other inputs not included in the experiment
- In order to compare two agorithms directly same hardware and software environments must be used

3 Limitations of Theory

- It is necessary to implement the theory, which may be difficult or time consuming
- Results may not be indicative of the typical running time on inputs encountered in the real world

4 Theoretical Ananlysis

- Uses a high-level description of the algorithm instead of implementation
- **Characterizes running time as a function of the input size, n**
- Takes into account all possible inputs
- Allows us to evaluate the speed of an algorithm intedependently of the hardware/software environment