

# 期末预测考点

下面列出了会涉及到的考点：

## Algorithms (算法)

- Big O notation (大O记号)
- Exhaustive enumeration (穷尽枚举)
- Guess and check (猜测和检查)
- Successive approximation (逐次逼近)
- Divide and conquer algorithms (分治法)
- Binary search (二叉搜索)
- Merge sort (融合排序)
- Greedy algorithms (贪婪算法)
- Optimization problems (最优化问题)
  - Knapsack problems (背包问题)
- DFS and BFS (广度优先搜索和深度优先搜索)
- Backtracking (回溯)
- Branch and bound (分支定界算法)
- Decision trees (决策树)
- Orders of growth (增长顺序)
  - Exponential (指数)
  - Polynomial (多项式)
  - Linear (线性)
  - Log (对数)
- Amortized analysis (平摊分析)

## Linguistic issues (语言问题)

- Values, types, expressions variables (值, 类型, 表达式变量)
- Builtin types: int, float, string, list, dictionary, set (内建类型: 整型, 浮点型, 字符串, 列表, 字典, 设置)
- Mutability and aliasing (易变性和混淆)
- Control flow and iteration (控制流和重复)
- Functions and methods (方程和方法)
- Input/output (输入/输出)
- Recursion and call stacks (递归和调用栈)
- Exceptions (例外)
- Polymorphism (多形性)
- Modules (组件)
- Classes and OO (类和面向对象)
- PyLab

## Simulation (模拟)

- Random walks (随机移动)
- Monte Carlo methods (蒙特卡洛方法)
- When you should believe the answer (什么时候该相信答案)

## Understanding data (理解数据)

- Building computational models (建立计算模型)
- Uniform, normal, and exponential distributions (统一, 标准和指数分配)
- Linear regressions (线性回归)
- Evaluating fits (评价适应)
  - R<sup>2</sup>
  - Over fitting (过度适应)
- Statistical sins (统计状态)
  - Texas sharpshooter (德克萨斯神枪手)
  - Data enhancement (增强型数据)
  - Non-representative sample (非典型案例)
  - cum hoc ergo propter hoc (暨此谬误)
- Plotting (策划)

## Software engineering (软件工程)

- Debugging and testing (调试和测试)
- Invariants (不变量)
- Data abstraction (抽象数据)