**Computer science**

**Data structures**

**What is the purpose of a list (array in some programming languages) data structure? Name some methods of it!**

**What is the difference between a list/array and a set?**

**What is the purpose and methods of a dictionary/map data structure?**

**Algorithms**

**Fibonacci sequences. Write a method (or pseudo code), that generates the Fibonacci sequences.**

**How do you find a max value in a list/array if you can’t use any built-in functions?**

**How do you find the average of values in a list/array if you can’t use any built-in functions?**

**Explain an algorithm which sorts a list!**

**Programming paradigms - procedural**

**What is the call stack?**

**What is “Stack overflow”?**

**What are the main parts of a function?**

**Programming languages - Python**

**How do you use a dictionary in Python?**

**What does it mean that an object is immutable in Python?**

**What is conditional expression in Python?**

**What are different types of arguments in Python?**

**What is variable shadowing? (context: variable scope)**

**What can happen if you try to delete/drop/add an item from a List, while you are iterating over it in Python?**

**What is the "golden rule" of variable scoping in Python (context: LEGB)? What is the lifetime of variables?**

**If you need to access the iterator variable after a for loop, how would you do it in Python?**

**What type of elements can a list contain in Python?**

**What is slice operator in Python and how to use?**

**What arithmetic operators (+,\*,-,/) can be used on lists in Python? What do they do?**

**What is the purpose of the in and not in membership operators in Python?**

**What does the + operator mean when used with strings in Python?**

**Explain f strings in Python!**

**Name 4 iterable types in Python!**

**What is the difference between list/set/dictionary comprehension and a generator expression in Python?**

**Does the order of the function definitions matter in Python? Why?**

**What does unpacking mean in Python?**

**What happens when you try to assign the result of a function which has no return statement to a variable in Python?**

**Software engineering**

**Debugging**

**What techniques can you use while debugging a program in Python?**

**What does step over, step into and step out mean while using the debugger?**

**How can you start to debug a program from a certain line using the debugger?**

**Version control**

**What are the advantages of using a version control system?**

**What is the difference between the working directory, the staging area and the repository in git?**

**What are remote repositories in git?**

**Why does a merge conflict occur?**

**Through what series of commands could you put a new file into a remote repository connected to your existing local repository?**

**What does it mean atomic commits and descriptive commit messages?**

**What’s the difference between git and GitHub?**

**Software design**

**Clean code**

**What does clean code mean?**

**What steps do we usually do during a clean code refactoring?**

**Error handling**

**What is exception handling?**

**What are the basics of exception handling in Python?**

**In which case should we catch an exception? Why?**

**What can/should we do with an exception in the ‘except’ block?**

**What does the else and finally statement do in a try-except block in Python?**