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# **1 Overview**

## **1.1 Programming Languages**

## **1.2 Compiler**

## **1.3 Programming Paradigms**

## **1.4 Code Quality and Design**

1. design patterns
2. aspect/feature oriented programming
3. test driven development

## **1.5 Operating System Concepts**

## **1.6 Algorithms**

## **1.7 Data Structure**

## **1.8 Distributed Systems**

## **1.9 Machine Learning**

## **2 C++**

### **2.1 Initilization**

### **2.2 Value and copy semantics**

### **2.3 Modules**

### **2.4 Exceptions**

### **2.5 Idiom**

**RAII** Resource ...

**SFINAE** Resource ...

## **3    Compiler**

### **3.1    Parsers**

### **3.2    Lex**

### **3.3    Front-End**

### **3.4    Back-End**

### **3.5    IR**

### **3.6    Optimization**