# Chương 1 Lexical Analysis

Introduction: <https://www.youtube.com/watch?v=vUmKTL5C3hA>

Implementation: <https://www.youtube.com/watch?v=LRBdmwtd2hY>

Finite Automata: <https://www.youtube.com/watch?v=tU_b9aCaEuo>

DFA: <https://www.youtube.com/watch?v=8TbkSMoO9dQ>

Regex: <https://www.youtube.com/watch?v=ADOq4BFxvfQ>

RE and FA: <https://www.youtube.com/watch?v=zXnmAAvI3kU>

Convenience Notations: <https://www.youtube.com/watch?v=HlSgaLcp4FA>

Introduction to ANTLR: <https://www.youtube.com/watch?v=9PzrXzQfxTE>

Example ANTLR: <https://www.youtube.com/watch?v=9c8uK955OKg>

# Chương 2 Syntax Analysis

Introduction: <https://www.youtube.com/watch?v=3bbKfqrO3YI>

Why not use Regex ?: <https://www.youtube.com/watch?v=j9oy145si_0>

Context Free Grammar: <https://www.youtube.com/watch?v=BkP5R1Gj3hs>

Derivation: <https://www.youtube.com/watch?v=ewYfY6F4H0o>

Context Free Language: <https://www.youtube.com/watch?v=bK1vIT9zWQY>

Language Recognition: <https://www.youtube.com/watch?v=eZUTQO4BNLI>

Write a Grammar: <https://www.youtube.com/watch?v=6K6W1IlZsaQ>

Hierarchy structure: <https://www.youtube.com/watch?v=3ROLBNifYYk>

Just Order, not Constraint: <https://www.youtube.com/watch?v=euXndqLg3cA>

Many 2 One: <https://www.youtube.com/watch?v=UKm-N-AznAg>

Nested Structure: <https://www.youtube.com/watch?v=zalDjGQ2ssg>

EBNF: <https://www.youtube.com/watch?v=0ZptOPjUI8U>

Ambiguous grammar: <https://www.youtube.com/watch?v=ID1em5HDEsU>

Operator Association: <https://www.youtube.com/watch?v=1Dj-4B_ATv8>

Operator Priority: <https://www.youtube.com/watch?v=Lpl3v5CVH20>

If-else: <https://www.youtube.com/watch?v=YykA2aVq4Qs>

Tools: <https://www.youtube.com/watch?v=BgbBPpl976g>

# Chương 3 OOP

Introduction to OOP: <https://www.youtube.com/watch?v=WZAU64PbbmA>

OOP’s Feature: <https://www.youtube.com/watch?v=y0xBUJjQwbY>

Class Hierarchy: <https://www.youtube.com/watch?v=kpKtkrg30fI>

Method and Message: <https://www.youtube.com/watch?v=WXOo1e9prV8>

Other Concepts in OOP: <https://www.youtube.com/watch?v=hT5s65R2m9M>

Introduction to Scala: <https://www.youtube.com/watch?v=Hl0sJ1-RiP8>

Example on Case Class: <https://www.youtube.com/watch?v=_QVm0N9ZiYw>

Example on Trait: <https://www.youtube.com/watch?v=mRZLvv8m_YI>

Access Modifier: <https://www.youtube.com/watch?v=qDKZLrA6wZM>

Python OOP1: <https://www.youtube.com/watch?v=p4sTWEUo7tw>

Python OOP2: <https://www.youtube.com/watch?v=-dg7vva-zcI>

Python OOP3: <https://www.youtube.com/watch?v=g4Cu146w01Q>

Python OOP4: <https://www.youtube.com/watch?v=gCb0HjpvKWI>

Python OOP5: <https://www.youtube.com/watch?v=K7-_YFqt9AU>

Python OOP6: <https://www.youtube.com/watch?v=X8qWsOrHWPU>

# Chương 4 FP

Introduction to FP: <https://www.youtube.com/watch?v=KkXqfl0fWAU>

High-Order Function: <https://www.youtube.com/watch?v=kLttI7-Y8tc>

Function as Parameter: <https://www.youtube.com/watch?v=mazIhRcy7kQ>

Currying Function: <https://www.youtube.com/watch?v=QKRvZYiYxTM>

Immutability: <https://www.youtube.com/watch?v=b8mGfV0NtgI>

Pattern matching: <https://www.youtube.com/watch?v=GZXK5J-i9qs>

Lazy Evaluation: <https://www.youtube.com/watch?v=etKOTUF7R4g>

Type Inference: <https://www.youtube.com/watch?v=D5SlVhp-E90>

Python FP1: <https://www.youtube.com/watch?v=PPuE5lgN5lo>

Python FP2: <https://www.youtube.com/watch?v=O8BQSlbqzWM>

Python FP3: <https://www.youtube.com/watch?v=vj9QL2Vm-RY>

Python FP4: <https://www.youtube.com/watch?v=NsXVZGH6nqs>

Python FP5: <https://www.youtube.com/watch?v=n6mT6HlkoCA>

Python FP6: <https://www.youtube.com/watch?v=w6q2dQCJ3-E>

# Chương 5 AST

Introduction to AST: <https://www.youtube.com/watch?v=MqLuMVjLNUQ>

AST Example: <https://www.youtube.com/watch?v=BrefuB8bQyE>

AST Example in Scala: <https://www.youtube.com/watch?v=29-ASfoxlmo>

Parse Tree by ANTLR: <https://www.youtube.com/watch?v=b2JrdgSEtoU>

Traversal on Parse Tree: <https://www.youtube.com/watch?v=3hISaxxxckY>

Useful Method: <https://www.youtube.com/watch?v=zWWMQg0SeZ4>

Multiple Symbol: <https://www.youtube.com/watch?v=uOMtf8YR0EA>

Visitor in ANTLR: <https://www.youtube.com/watch?v=tmbhD363QU4>

AST Generation 1: <https://www.youtube.com/watch?v=GTwVkgh3wDI>

AST Generation 2: <https://www.youtube.com/watch?v=R8hqxex81Mo>

# Chương 6 Name

Name Introduction: <https://www.youtube.com/watch?v=iAhuj1RPp5A>

Binding: <https://www.youtube.com/watch?v=3vtxHwgMn-4>

Object: [https://www.youtube.com/watch?v=BY4iyOjz48s](https://www.youtube.com/watch?v=BY4iyOjz48s&t=2s)

Block: <https://www.youtube.com/watch?v=dwkDC5m6I8g>

Reference: <https://www.youtube.com/watch?v=Czzd2Ci-WnM>

Python Scope 1: [https://www.youtube.com/watch?v=kDthJSvEkqM](https://www.youtube.com/watch?v=kDthJSvEkqM&t=4s)

Python Scope 2: [https://www.youtube.com/watch?v=McKb8KFMv2g](https://www.youtube.com/watch?v=McKb8KFMv2g&t=48s)

Python Scope 3: <https://www.youtube.com/watch?v=nQsSsxB1Ja0>

# Chương 7 Type

Introduction to Data Type: <https://www.youtube.com/watch?v=GGaJBvRZs4Y>

Scalar Type: <https://www.youtube.com/watch?v=6USVNXc9_cE>

User-defined Ordinal Type: <https://www.youtube.com/watch?v=dsA45OPey-w>

Composite Type: <https://www.youtube.com/watch?v=QtCX165HWHo>

Array Type: <https://www.youtube.com/watch?v=a7k6g8cEuhc>

Array Type Implementation: <https://www.youtube.com/watch?v=r2gDKAffAhY>

String Type: <https://www.youtube.com/watch?v=9Ed31n5PncU>

Record Type: <https://www.youtube.com/watch?v=jw32GPzVILA>

Record Type Implementation: <https://www.youtube.com/watch?v=aL9huJo_6Hg>

Union Type: <https://www.youtube.com/watch?v=UvXGSDBckzg>

Type Expression: <https://www.youtube.com/watch?v=wh52LNw15TM>

Type Checking: <https://www.youtube.com/watch?v=TDWPzbdddC8>

Type Inference: <https://www.youtube.com/watch?v=Axd6B8_HaVk>

Type Equivalence: <https://www.youtube.com/watch?v=Ur71Kq4un0E>

Type Compatibility: <https://www.youtube.com/watch?v=QHse9Ekq8QA>

Polymorphism: <https://www.youtube.com/watch?v=lD6qOESYGwg>

Python Data 1: <https://www.youtube.com/watch?v=ZubF1jCxXj8>

Python Data 2: <https://www.youtube.com/watch?v=4AkpbfNRShA>

Python Data 3: <https://www.youtube.com/watch?v=iPxwi0pEj7I>

Python Data 4: <https://www.youtube.com/watch?v=A_BxZlWf_yE>