

4.2 Types of programming language, translators and IDEs

Name: _____ Class: _____ Date: _____

Total: 8 marks

Objective

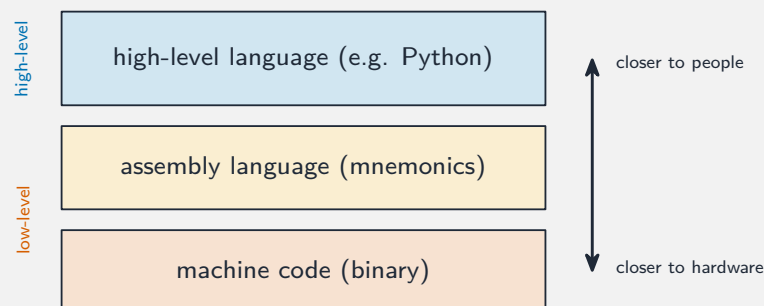
Build the skills to answer exam questions on **programming languages, translators and IDEs** 编程语言、翻译程序与集成开发环境—**high/low-level** 高级/低级 languages, **compiler vs interpreter** 编译器/解释器, and IDE tools.

You must be able to:

- compare high-level and low-level languages
- compare a compiler and an interpreter
- list the tools in an IDE

1 Worked examples

■ Translators



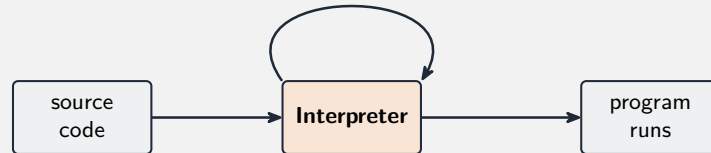
High-level: easy, runs on any computer. Low-level (assembly, machine code): tied to one CPU

Compiler — translate the whole program once



translated once; the machine code then runs many times

Interpreter — one line at a time



reads, translates and runs one line at a time (every run); stops at the first error

Compiler: translates all at once, finished program runs fast. Interpreter: line by line, stops at first error

2 Practice

2.1 State one advantage of a high-level language.

[1]

2.2 State two tools found in an IDE.

[2]

3 Exam-style questions

3.1 A compiler translates:

[1]

- A one line at a time
- B the whole program at once
- C only the errors
- D nothing

3.2 A programmer is writing and testing a new program.

(a) State whether a compiler or an interpreter is more useful while testing, and why. [2]

(b) State two differences between a compiler and an interpreter.

[2]

4 Go further

You are now ready for the real exam questions on this subtopic. Open the **4.2 Programming languages, translators and IDEs** past-paper sheet in the Library, or try these in **Practice mode**:

- 0478/12 N25 —Q3 (languages / translators)
- 0478/12 M25 —Q7 (compiler / interpreter)

Solutions

2.1 any of: easy to read/write/fix; independent of the computer (runs on any type).

2.2 any two of: code editor; run-time environment; translator; error diagnostics; auto-completion; prettyprinting.

3.1 B. A compiler translates the whole program at once.

3.2 (a) an interpreter; because it stops at the first error, which helps find mistakes while testing.

(b) any two of: compiler translates all at once / interpreter line by line; compiler reports all errors at the end / interpreter stops at the first; the compiled program runs faster; the interpreter is needed each time the program runs.