

1. What is “Programming Language” ?

- Language : English, Korean, Japanese,
- Programming Language : FORTRAN, C, COBOL,....
 - Machine Language -> Assembly Language -> HLL -> Very HLL

2. Why study “Programming Language Concept” ?

- Helps to make the program that can be executed efficiently
- Helps to learn a new PL easily
 - Imperative Language : von-Neumann Computer
 - Declarative Language : Prolog, LISP, ...

3. What will we study in this Class ?

- Data : integer, char, float, array, structure, ...
- Control : if_then_else, for_loop, while_loop, switch, ...
- Subprogram : procedure vs. function, parameter passing, ...
- Object-Oriented Programming Concepts : abstract data type, object, message, inheritance, polymorphism, ...
- C++ : a Better C + OOP

C-like Language Program

```
main() {
    int i, j, k ;
    char a, b ;
    float f = 0.0;

    i = 65536; /* 216=65536 */
    for (i=100; i>100; i++) {
        f = f + i;
        f = f + f ;
    }
    i = 100; j = 200 ;
    swap(i, j);
}

swap (a, b) {
    int temp ;
    temp = a ;
    a = b;
    b = temp ;
}
```

c언어는 pretest loop라서 조건을 먼저 확인하고 참이면 돌아가는데,
어떤 언어는 do while 처럼 먼저 돌고 그 다음부터 조건을 확인하는 게 있음

코션 compiler generated type conversion
원래 float + int는 안되는데 컴파일러가 int를 float로 바꿔서 해줌

float 더하기 할 때도 +를 쓰고 int 더하기 할 때도 +를 쓰는데, 기계어에서는 명령이 다름
그래서 컴파일러는 피연산자를 보고 판단함 (operator overloading)

c 처럼 call by value면 값이 안바뀌고
java 처럼 call by reference 면 값이 바뀐다

Which CPU ?

- ✓ 16-bit CPU
- ✓ 32-bit CPU

16bit cpu에서는 word 가 2byte (int가 2byte)
65536 면 오버플로우

Loop Control

- ✓ Pre_test
- ✓ Post_test

Operator Overloading

Inconsistent Type

- ✓ (warning) Error
- ✓ Coercion

Parameter Passing

- ✓ Pass by value
- ✓ Pass by reference
- ✓ Pass by name

Concept of Programming Languages

