

Part I — C++

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These notes are not endorsed by the lecturers, and I have modified them (often significantly) after lectures. They are nowhere near accurate representations of what was actually lectured, and in particular, all errors are almost surely mine.

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1 Print out the code

1.1 Hello world!

```
#include<stdio.h>
#include<iostream>
// A comment
int main(void)
{
printf("Hello_World\n");
return 0;
}
```

2 Template

```
#include <iostream>
using namespace std;
int main(){
    float hkd;
    float result;
    cin >>hk;
    result=hkd*14.2
    cout <<result; // print out the result
}
```

3 Data type

3.1 Variable and Constant

3.1.1 Numerical

- int: Integer type
- flaot, double:

Remark. How is Float works:

$\frac{1}{2}$	$\frac{1^2}{2}$	$\frac{1^3}{2}$	$\frac{1^4}{2}$	$\frac{1^5}{2}$	$\frac{1^6}{2}$	$\frac{1^7}{2}$	$\frac{1^8}{2}$
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How is Double work:

$\frac{1}{2}$	$\frac{1^2}{2}$	$\frac{1^3}{2}$	$\frac{1^4}{2}$	$\frac{1^5}{2}$	$\frac{1^6}{2}$	$\frac{1^7}{2}$	$\frac{1^8}{2}$	$\frac{1^9}{2}$	$\frac{1^{10}}{2}$	$\frac{1^{11}}{2}$	$\frac{1^{12}}{2}$	$\frac{1^{13}}{2}$	$\frac{1^{14}}{2}$	$\frac{1^{15}}{2}$	$\frac{1^{16}}{2}$
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Example.

3.1.2 Character

- char:

3.1.3 Logic

- bool:Boolean (true, false)

3.1.4 Other

- void:

4 Basic Operators

4.1 Type of Operators

4.1.1 Number Operator

4.1.2 Comparative Operator

This operators structure will return to boolean

```
\\Equality operators
== // equal to
!= // not equal to

\\Relational operators
> // greater than
>= // greater and equal than
< //
<= //
```

4.1.3 Logical Operator

This operators structure will return to boolean

```
! // not
&& // and
|| // or
```

Example. Given integer variable i,j and k, what are the outputs when running the program fragment below?

```
k = (i=2) && (j=2) ;
cout << i << j << endl; /* 2 2 */

k = (i=0) && (j=3) ;
cout << i << j << endl; /* 0 2 */

k = i || (j=4) ;
cout << i << j << endl; /* 0 4 */

k = (i=2) || (j=5) ;
cout << i << j << endl; /* 2 4 */
```

Answers:

4.1.4 Conditional Operator

4.1.5 Comma operator

5 Method

6 Flow control

6.1 If else statement

if must in first part else if else must in last part

```
if (logical_expression){
    statement;
    statement;
}
else if (logical_expression){
    statement;
    statement;
}
else{
    statement;
    statement;
}
```

6.2 Switch statement

What is Switch statement look like:

```
switch (expression) {
    case constant-expr1: statement1
    case constant-expr2: statement2
    ...
    ...
    case constant-exprN: statmentN
    default: statement
}
```

Example. Here is the example for using switch statement:

```
while ((c = getchar()) != EOF) { /* get a char */
    switch (c) {
        case '0': case '1': case '2': case '3': case '4':
        case '5': case '6': case '7': case '8': case '9':
            digit_count++; /* no braces is needed */
            break;
        case ' ': case '\n': case '\t':
            white_character_count++;
            break;
        default:
```



```
        other_character_count++;  
        break;  
    }  
}
```

7 Loop

7.1 While Loop

7.2 Do-while Loop

7.3 For Loop

8 Class

8.1 Constructor

8.2 this