

아두이노를 위한 C/C++ 특강

Sanglae Kim

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실습 방법

- GUI
- VS 2017에 대한 개발자 명령 프롬프트 + NotePad++
 - `cl helloWorld.c && helloWorld.exe`

Hello World

```
1  #include <stdio.h>
2  int main(){
3      printf("Hello World");
4      return 0;
5  }
```

입출력함수

- 출력함수
 - puts
 - fputs
 - putchar
 - printf
- 입력함수
 - getchar
 - gets
 - scanf

printf

```
int printf( const char * format, ...);
```

- 표준출력(모니터)으로 format이 지정하는 문자열을 출력한다.
- <http://www.cplusplus.com/reference/cstdio/printf/>

printf 예제

```
1  #include <stdio.h>
2  int main(){
3      printf ("Characters: %c %c \n", 'a', 65);
4      printf ("Decimals: %d %ld\n", 1977, 650000L);
5      printf ("Preceding with blanks: %10d \n", 1977);
6      printf ("Width trick: %*d \n", 5, 10);
7      printf ("%s \n", "A string");
8      return 0;
9  }
```


실행결과

```
Characters:  a                A
Decimals:   1977            650000
Preceding   with      blanks: 1977
Width       trick:      10
A           string
```

scanf

```
int scanf(const char * format, ...);
```

- 표준입력(키보드)으로부터 데이터를 입력받아 format에 따라 추가적인 파라미터가 가리키는 변수에 저장한다.
- <http://www.cplusplus.com/reference/cstdio/scanf/>

scanf 예제

```
1  #include <stdio.h>
2  int main (){
3      char str [80];
4      int i;
5
6      printf ("Enter your family name: ");
7      scanf ("%79s",str);
8      printf ("Enter your age: ");
9      scanf ("%d",&i);
10     printf ("Mr. %s , %d years old.\n",str,i);
11     printf ("Enter a hexadecimal number: ");
12     scanf ("%x",&i);
13     printf ("You have entered %#x (%d).\n",i,i);
14
15     return 0;
16 }
```

실행결과

```
Enter your family name: Soulie
Enter your age: 29
Mr. Soulie , 29 years old.
Enter a hexadecimal number: ff
You have entered 0xff (255).
```

연산자

- 사칙연산사
 - $+$, $-$, $*$, $/$
- 삼항연산자
 - `bigNumber = (2 > 3) ? 2 : 3;`
- 나머지 연산자($\%$)
 - `r = 7 % 2`
- 단항연산자
 - $++$, $-$

삼항연산자 예제

source code

```
1  #include <stdio.h>
2  int main(int argc, char *argv[])
3  {
4      int num1=3, num2=4;
5      int bigNumber;
6      //  fputs("Enter two numbers : ", stdout);
7      //  scanf("%d %d", &num1, &num2);
8      bigNumber = (num1 > num2) ? num1 : num2;
9      printf("The big number is  %d \n", bigNumber);
10     return 0;
11 }
```

실행결과

The big number is 4

응용예제

source code

```
1  #include <stdio.h>
2  int main(){
3      int temp = 0;
4      int N = 10;
5      for (int i=0; i<N; i++)
6          if(i%2)
7              temp += i;
8      printf("Sum of odd numbers from 0 to %d is %d\n", N, temp);
9  }
```

실행결과

Sum of odd numbers from 0 to 10 is 25

if (조건) {실행문} else {실행문}

```
1  #include <stdio.h>
2  typedef enum _Fruits {BANANA, APPLE} Fruits;
3  Fruits theFruit;
4  int main () {
5      printf("Which fruit do you like?\n");
6      printf("0. Banana 1. Apple ");
7      scanf("%d", &theFruit);
8      printf("Your answer is %d\n",theFruit);
9      if(theFruit == BANANA)
10         printf("It's banana\n");
11     else if(theFruit == APPLE)
12         printf("It's apple\n");
13     else
14         printf("0 Oh!! Your got the wrong fruit.....\n");
15     break;
16 }
```


switch-case

```
1  #include <stdio.h>
2  typedef enum _Fruits {BANANA, APPLE} Fruits;
3  Fruits theFruit;
4  int main () {
5      printf("Which fruit do you like?\n");
6      printf("0. Banana 1. Apple ");
7      scanf("%d", &theFruit);
8      printf("Your answer is %d\n",theFruit);
9      switch (theFruit) {
10         case BANANA:
11             printf("It's banana\n");
12             break;
13         case APPLE:
14             printf("It's apple\n");
15             break;
16         default:
17             printf("0 Oh!! Your got the wrong fruit.....\n");
18             break;
19     }
```

26. 콘솔입출력 및 연산자
○○○○○○○○○○○○○○○

27. 조건문과 반복문
○○●

28. 배열 및 문자열
○

29. 다양한 함수 만들기
○

30. 구조체 및 클래스
○

Intro 3
○

Intro 4
○

for loop

- this slide consists of two columns
- the first (left) column has no heading and consists of text
- the second (right) column has an image and is enclosed in an @example@ block

Example (A screenshot)

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Babel

Octave code

```
A = [1 2 ; 3 4]
b = [1; 1];
x = A\b
```

The output

A =

```
1    2
3    4
```

x =

```
-1
 1
```