아두이노를 위한 C/C++ 특강

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입출력함수

- 출력합수
  - 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

Source Code

```
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

```c
#include <stdio.h>
int main (){
   char str [80];
   int i;

   printf ("Enter your family name: ");
   scanf ("%79s",str);
   printf ("Enter your age: ");
   scanf ("%d",&i);
   printf ("Mr. %s , %d years old.\n",str,i);
   printf ("Enter a hexadecimal number: ");
   scanf ("%x",&i);
   printf ("You have entered %#x (%d).\n",i,i);

   return 0;
}
```

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

- 사칙연산자
  - +, -, *, /
- 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, te
9 }
```

실행결과

```
Sum of odd numbers from 0 to 10 is 25
```

%기호 출력하기

Source Code

```
1 #include <stdio.h>
2 int main(){
3   for(int i=0; i<8; i++ ){
4     for (int j=2; j<6; j++)
5       printf("%d␣%%␣%d␣=␣%d␣\t", i, j, i%j);
6     puts("");
7   }
8   return 0;
9 }
```

실행결과

```
0 % 2 = 0   0 % 3 = 0   0 % 4 = 0   0 % 5 = 0
1 % 2 = 1   1 % 3 = 1   1 % 4 = 1   1 % 5 = 1
2 % 2 = 0   2 % 3 = 2   2 % 4 = 2   2 % 5 = 2
3 % 2 = 1   3 % 3 = 0   3 % 4 = 3   3 % 5 = 3
4 % 2 = 0   4 % 3 = 1   4 % 4 = 0   4 % 5 = 4
```

if (조건) {실행문} else {실행문}

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

switch-case

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