



# **| Basis and Practice in Programming**

## week 5



# For statement in C

- What is for statement?
  - A statement for run specific code area continuously while a specific condition is true
- Three types of for statement
  - while
  - do –while
  - for

# For statement in C

- While

```
while( condition )  
{  
    statements;  
}
```

Run statements continuously while the condition is true

```
while( i < 10 )  
{  
    printf("Hello world! \n");  
    i++;  
}
```

Run continuously printf() and i++ statements while the condition "i < 10" is true

# For statement in C

- While statement

```
/* week5 practice 1 */
#include <stdio.h>

int main(void)
{
    int i=0;

    while(i<10)
    {
        printf("Hello World! \n");
        i++;
    }
    return 0;
}
```

# For statement in C

- Nested while
  - While statement in while statement

```
while( condition )
{
    statements;

    while( condition )
    {
        statements;
    }
}
```

```
/* week5 practice 2 */
#include <stdio.h>

int main(void)
{
    int i=0, j=0;

    while(i<3)
    {
        printf("The value of i = %d *** Wn", i);

        while(j<2)
        {
            printf("The value of j = %d Wn", j);
            j++;
        }

        i++;
        j=0;
    }

    return 0;
}
```

# For statement in C

- Nested while

```
/* week 5 practice 3*/
#include <stdio.h>

int main(void)
{
    int i=2;
    int j=0;

    while(i<10)
    {
        j=1;
        while(j<10)
        {
            printf("%d*%d=%d \Wn", i, j, i*j);
            j++;
        }
        i++;
    }

    return 0;
}
```

# For statement in C

- do – while
  - Run the loop once and check the condition

```
do
{
    statements;
} while( condition )
```

```
do
{
    printf("%d * %d = %d\n", val, i, val*i);
    i++;
} while( i < 10 )
```

# For statement in C

- do – while

```
/* week 5 practice 4 */
#include <stdio.h>

int main(void)
{
    int val;
    int i=1;

    printf("What stage of times table? ");
    scanf("%d", &val);

    do
    {
        printf("%d*%d=%d \Wn", val, i, val*i);
        i++;
    }while(i<10);

    return 0;
}
```



# For statement in C

- for
  - Consists of three parts
    - Initialization statement
    - Condition statement
    - Increment, decrement statement

```
int main()
{
    int i = 0;
    while( i < 10 )
    {
        printf("Hello world!\n");
        i++;
    }
    ...
}
```

```
for( int i = 0; i < 10; i++; )
{
    statements;
}
```

# For statement in C

- Nested while

```
/* week 5 practice 5*/
#include <stdio.h>

int main(void)
{
    int i, j;

    for(i=2; i<10; i++)
    {
        for(j=1; j<10; j++)
            printf("%d*%d=%d \Wn", i, j, i*j);
    }

    return 0;
}
```

# For statement in C

- Braces of while statement
  - Braces ( '{' and '}' ) are essential with two or more statements

```
while(i<10)
{
    printf("Hello World! \n");
    i++;
}
```

```
while(i<10)
    printf("Hello World! \n"), i++;
```

# For statement in C

- Infinite loop

```
while( 1 ) // the value 1 instead of condition statement
{
    printf("Hello World! \n");
    i++;
}
```

# For statement in C

- Week 5 exercise
  - Input a integer odd number from a user
  - Show a sandglass which consists of character '\*'
  - The input number is the size of bottom side of the sandglass
  - Due date: Oct, 16, 11:59 pm

**Input**  
7

**Output**

```
*****  
  
*****  
  
***  
  
*  
  
***  
  
*****  
  
*****
```

# For statement in C

- Week 5 exercise
  - Example output

```
kwangmin@kwangmin-desktop-ubuntu: ~  
kwangmin@kwangmin-desktop-ubuntu:~$ ./week5_excer < w5_exer_input.txt  
*****  
  *****  
    ***  
      *  
    ***  
  *****  
*****  
kwangmin@kwangmin-desktop-ubuntu:~$ █
```