# Ch5: Loop

305171 Computer Programming
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#### How to make repeated instructions

```
#include <stdio.h>
int main()
    printf("Hello World\n");
    printf("Hello World\n");
    printf("Hello World\n");
    printf("Hello World\n");
    return 0;
```

# For loop

```
#include <stdio.h>
                                               Increment /
                                 Condition to
                         initial
                                               decrement
       int main()
                                  end loop
                                               the counting
                        count
                                                number
             for(int i=1;i \leftarrow 4;i++){
 Repeated
             printf("Hello World\n");
instructions
             return 0;
```

## While loop

```
#include <stdio.h>
                       initial
       int main()
                       count
                               Condition to
                                 end loop
            int i=1;
            while(i <=4){
 Repeated
             printf("Hello World\n");
instructions
            i++;
                             Increment /
                             decrement
                             the counting
            return 0;
                              number
```

#### Do...while loop

```
#include <stdio.h>
                           initial
         int main()
                           count
              int i=1;
              do{
 Repeated
instructions
               printf("Hello World\n");
              i++;
 Increment /
                                       Condition to
              }while(i<=4);</pre>
 decrement
                                         end loop
 the counting
              return 0;
  number
```

## For / While vs. Do..while

#### For loop & While loop

 Check if the condition is true then do instructions inside { }

#### Do...while loop

Do instructions inside {}
 then check if the
 condition is true, then
 go to the next round.

#### Practice: Loop

```
int main()
{
    int i=5;
    while(i>0){
        printf("%d ",i);
        i--;
    }
    return 0;
}
```

```
int main()
{
    for(int i=5;i>0;i--){
        printf("%d ",i);
    }
    return 0;
}
```

```
int main()
    int i=5;
    do{
        printf("%d ",i);
        i--;
    }while(i>0);
    return 0;
```

## **Nested Loop**

```
#include <stdio.h>
int main()
    int i=1;
    while(i<=4){
        printf("%d: ",i);
        for(int j=1;j<=i;j++)</pre>
        printf("*");
    printf("\n");
    i++;
    return 0;
```

i	j
1	1
2	1
	2
3	1
	2
	3
4	1
	2
	3 4
	4