Loop/Repetition Statements
Lecture 4 Assignments

1. What is the output of the following program?

```c
#include <stdio.h>
int main(void)
{
 int i;
 i = 1;
 while (i <= 128) {
 printf("%d ", i);
 i *= 2;
 }
 return 0;
}
```

```
1 2 4 8 16 32 64 128
Process returned 0 (0x0)   execution time : 0.052 s
Press any key to continue.
```

2. Which one of the following statements is not equivalent to the other two (assuming that the loop bodies are the same)?

```c
#include <stdio.h>

int main(){
    int i;
    i = 0;

    printf("While loop:\n\n");
    while (i < 10){
        printf("value of i = %d\n", i);
        i++;
    }

    printf("\nFor loop:\n\n");
    for (i = 0; i < 10; i++){
        printf("value of i = %d\n", i);
    }

    do{
        i++;
    } while (i < 10);
    printf("\nDo...while loop:\n\n");
    printf("value of i = %d\n", i);

    return 0;
}
```

```
"C:\Users\Toshiba\OneDrive\Documents\first project\as2(loops).exe"
While loop:

value of i = 0
value of i = 1
value of i = 2
value of i = 3
value of i = 4
value of i = 5
value of i = 6
value of i = 7
value of i = 8
value of i = 9

For loop:

value of i = 0
value of i = 1
value of i = 2
value of i = 3
value of i = 4
value of i = 5
value of i = 6
value of i = 7
value of i = 8
value of i = 9

Do...while loop:

value of i = 11

Process returned 0 (0x0)   execution time : 0.057 s
Press any key to continue.
```

3. Convert item 1 into an equivalent for statement.

```c
#include <stdio.h>

int main()
{
    int i;

    for(i = 1; i <= 128; i *= 2){
        printf("%d ", i);
    }
    return 0;
}
```

```
"C:\Users\Toshiba\OneDrive\Documents\first project\as3(loops).exe"
1 2 4 8 16 32 64 128
Process returned 0 (0x0)   execution time : 0.054 s
Press any key to continue.
```

4. Write a code that computes for the power of two:

```c
#include<stdio.h>

int main(){

    long int p;
    int n;

    printf("\n---    ----------");
    printf("\n n     2 to the n");
    printf("\n---    ----------");

    p = 1;
    for (n = 0; n < 11; ++n) {
      if (n == 0)
        p = 1;
      else
        p = p * 2;
      printf("\n%2d    %8d", n, p);
    }
    printf("\n---    -----------");
    return 0;
  }
```

```
"C:\Users\Toshiba\OneDrive\Documents\first project\as4(loops).exe"

---   ----------
 n    2 to the n
---   ----------
 0          1
 1          2
 2          4
 3          8
 4         16
 5         32
 6         64
 7        128
 8        256
 9        512
10       1024
---    -----------
Process returned 0 (0x0)   execution time : 0.098 s
Press any key to continue.
```

5. Write a program that displays a one-month calendar.

```c
#include<stdio.h>

int main(){

    int i,num_of_days;
    int first;

    printf("Enter number of days in a month: ");
    scanf("%d",&num_of_days);

    if (num_of_days <= 27){

        printf("Invalid input.");
    }

    else if (num_of_days >= 32){

        printf("Invalid input.");
    }

    else {

    printf("Enter first day in a month: ");
    scanf("%d",&first);

    for(i = 1; i < first; i++)
       printf("");

    for(i = 1; i <= num_of_days; i++){
       printf("%3d", i);

       if((first + i-1) % 7 == 0)
          printf("\n");
    }
    return 0;
    }
}
```

```
"C:\Users\Toshiba\OneDrive\Documents\first project\as5(loops).exe"
Enter number of days in a month: 30
Enter first day in a month: 1
  1  2  3  4  5  6  7
  8  9 10 11 12 13 14
 15 16 17 18 19 20 21
 22 23 24 25 26 27 28
 29 30
Process returned 0 (0x0)   execution time : 3.955 s
Press any key to continue.
```