Lesson 4 Lab

Task 1: define a program to randomly generate and then print a number in range between 4 to 9

```
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

int main()
{
    srand(time(NULL));
    int random = rand() % 6;
    printf("%d", random + 4);
    return 0;
}
```

Task 2: define a program to randomly generate and print the top value on a six-sided die (1 ~ 6) for 20 times (Hint: top value is the value on the side facing up)

```
#include <stdio.h>
#include <stdlib.h>
#include <time.h>

int main()
{

    srand(time(NULL));
    for (int i = 0; i < 20; i++)
    {
        int random = rand() % 6;
        printf("%d ", random + 1);
    }
    return 0;
}
```

Task 3: define a program to calculate 10! and print the result, using recursion
[hint: int may not be big enough, you may want to use long]

```
#include <stdio.h>

long Factorial(long res)
{
   if (res == 0) return 1;
   return res * Factorial(res - 1);
}
int main()
{
   long ten = 10;
   long result = Factorial(ten);
   printf("%ld", result);
   return 0;
}
```

Task 4: define a program which reads in one positive integer from user, and then print out the input number in reversed order, using recursion
(Eg, when input is 123, output should be 321; when input is 100, output can be 001 or just 1)

```
#include <stdio.h>

int Reverser(int num)
{
    if (num == 0) return;
    printf("%d", num % 10);
    Reverser(num / 10);
}
int main()
{
    int num;
    scanf("%d", &num);
    Reverser(num);
```

```
    return 0;
}
```

Task 5: define a program, using recursion, to calculate and print the first 20 numbers in Fibonacci sequence [hint: 0 1 1 2 3 5 8 13 21 34 … (since the third number, each one is the sum of the previous two)]

```
#include <stdio.h>

int fib(int n)
{
    if (n == 0) return 0;
    if (n == 1) return 1;
    return fib(n - 1) + fib(n - 2);
}

int main()
{
    for (int n = 0; n < 20; n++)
    {
        printf("%d ", fib(n));
    }
    return 0;
}
```