

North South University
Department of Electrical and Computer Engineering
CSE 115L: Programming Language I Lab
Week 03 – Assignments

1. Write a program to find the factorial value of any number entered through the keyboard.
2. Two numbers are entered through the keyboard. Write a program to find the value of one number raised to the power of another.
3. Write a program to print out all Armstrong numbers between 1 and 500. If sum of cubes of each digit of the number is equal to the number itself, then the number is called an Armstrong number. For example, $153 = (1 * 1 * 1) + (5 * 5 * 5) + (3 * 3 * 3)$
4. Write a program for a matchstick game being played between the computer and a user. Your program should ensure that the computer always wins. Rules for the game are as follows:
 - There are 21 matchsticks.
 - The computer asks the player to pick 1, 2, 3, or 4 matchsticks.
 - After the person picks, the computer does its picking.
 - Whoever is forced to pick up the last matchstick loses the game.
5. Write a program to enter the numbers till the user wants and at the end it should display the count of positive, negative and zeros entered.
6. Write a program to print all prime numbers from 1 to 300. (Hint: Use nested loops, break and continue)
7. Write a program to produce the following output:

```
A B C D E F G F E D C B A
A B C D E F   F E D C B A
A B C D E     E D C B A
A B C D       D C B A
A B C         C B A
A B           B A
A             A
```

8. Write a program to produce the following output:

```
      1
    2   3
  4   5   6
7   8   9   10
```

9. Write a program to produce the following output:

```

      1
    1  1
  1  2  1
1  3  3  1
  4  6  4  1

```

10. Write a C program to print the diamond patterns of stars.

```

  *
 ***
*****
 ***
  *

```

11. Write a C program to print patterns of stars.

```

  *
 ***
*****
*****
*****

```

12. What would be the output of the following programs:

a) `main()`
`{`
`int x = 4, y, z ;`
`y = --x ;`
`z = x-- ;`
`printf ("\n%d %d %d", x, y, z) ;`
`}`

b) `main()`
`{`
`int x = 4, y = 3, z ;`
`z = x-- -y ;`
`printf ("\n%d %d %d", x, y, z) ;`
`}`

c) `main()`
`{`
`int x = 4, y = 0, z ;`
`while (x >= 0)`
`{`
`if (x == y)`
`break ;`
`else`
`printf ("\n%d %d", x, y) ;`
`x-- ;`

```

      y++ ;
    }
}

d) main( )
{
    int i = 1, j = 1 ;
    for ( ; ; )
    {
        if ( i > 5 )
            break ;
        else
            j += i ;
        printf ( "\n%d", j ) ;
        i += j ;
    }
}

```

```

e) main( )
{
    int i ;
    for ( i = 1 ; i <= 5 ; printf (
        "\n%c", 65 ) ) ;
        i++ ;
}

```