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Case Study of Functions (part 1)

Case 1: Triangle of Size n

- Input a number. (range from 3 to 30)
- Use the ‘triangle’ function for print triangle. (size is input number)

```
//Function : Triangle of size n

#include <conio.h>
#include <stdio.h>

int main()
{
    void triangle(int);      //function prototype
    int  size;               //triangle size

    printf("Please input the triangle size (range from 3 to 30): ");
    scanf("%d",&size);       //input triangle size

    while(size < 3 || size > 30)  //triangle size boundary
    {
      printf("The triangle size is over range, Please input again : ");
      scanf("%d",&size);
    }

    triangle(size);      //call function

    getche();
    return 0;
}
```

```
void triangle(int size)    //print triangle
{

  for (int row=1; row<=size; row++) //process row boundary
  {
    for (int col=0; col<row; col++) //process col boundary
    {
      printf("*");
    }
    printf("\n");  // end the line.
  }

}
```

Execution Result

```
Please input the triangle size (range from 3 to 30): 15
*
**
***
****
*****
******
*******
********
*********
**********
***********
************
*************
**************
***************
```

Case 2: Integer Factorization

- Input a integer number.
- Use the ‘factorization’ function for integer factorization and print factors.

```
//Function : Integer factorization

#include <conio.h>
#include <stdio.h>

int main()
{
    void factorization(int);     //function prototype
    int  number;                 //the number for factorization

    printf("Please input the integer number : ");
    scanf("%d",&number);         //input number

    factorization(number);       //call function

    getch();
    return 0;
}
```

```
void factorization(int number)   //find factor
{
      int  factor=2;              //base factor

      printf("%d factors :",number);

      while(factor <= number)         //integer factorization
      {
        if(number % factor ==0)       //factor determine
        {
          printf("%3d",factor);
          number = number / factor;
        }
        else
          factor++;
      }                               //end while
}
```

Execution Result

```
Please input the integer number : 67
67 factors : 67
```

```
Please input the integer number : 900
900 factors :  2  2  3  3  5  5
```