1. Write a program that calculates the sum S = 1+2+3+...+n using three different loop structures. The number n should be read from the user.
2. Write a program that asks the user for two numbers and prints them in ascending order, if the numbers are different, and if the numbers are the same, the program should print "The numbers are equal".
3. Write a function that finds the largest element in an integer array. The prototype should be `int maximum(int array[], int size);` where `array` is the array and `size` is its size. Function returns the largest element. Write a main function where you test this function.
4. Write a function that calculates the product of two complex numbers. The complex numbers should be represented as structures of two real numbers: one for the real part and another for the imaginary part. The arguments of the function should be the coefficients of the product and the function should return the product.
5. Write a program where you make a 10x10 real number matrix called `matrix` (a 2D array), and set the matrix to be the identity matrix. In an indentity matrix elements $a_{ii} = 1$ and all the others are zeros, that is, $a_{ij} = 0$, if i is not equal to j. Use loops.
6. Write a function called swap, that swaps the values of two real number values. Also write a main function that uses the swap function.
7. What gets printed when this program is run:
```c
#include <stdio.h>
main()
{
    int i;
    double x = 0, y = 1, *p;
    p = &x;
    for (i = 0; i < 3; i++) {
        y *= 2;
        printf("%d %f\n", i / 2, *p);
        p = &y;
    }
}
```
8. What gets printed when this program is run:
```c
#include <stdio.h>
double hocus(int i, double *x);
main()
{
    int i = 13, j;
    double x, y = 1, a[3] = {1, 2, 3};
    x = hocus(i, &y);
    j = i / 5;
    printf("%d %f %f\n%f %d %d\n", i, x, y, a[1], i % 5, j);
}
double hocus(int i, double *x)
{
    *x = i + 1;
    i = 3;
    return (2 * *x);
}
```
9. Write a function that copies a string 'a' to string 'b'. The prototype should be `void copystr(char a[], char b[]);`