DSA - POINTERS
LAB 5

FILS

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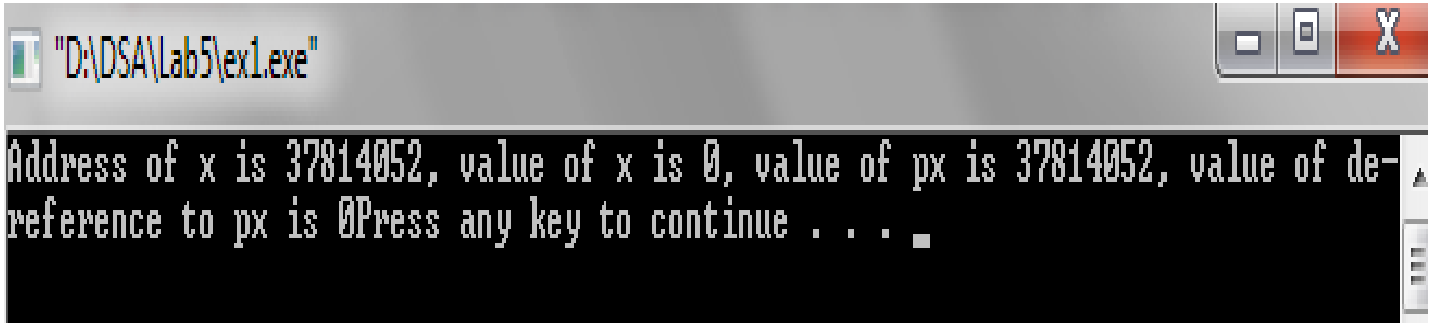
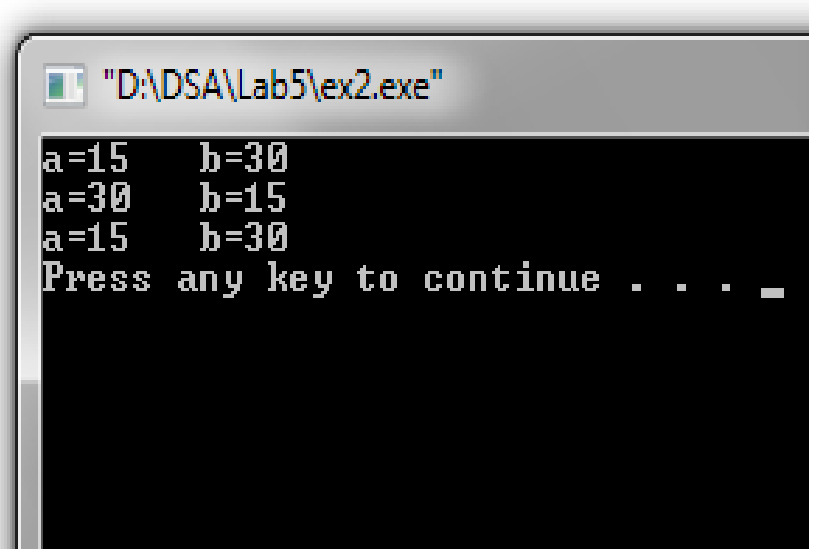
Example 1

```
#include<stdio.h>
#include<iostream.h>
int main(){
    int x=0;
    int *px;
    px=&x;
    printf("Address of x is %d, value of x is %d, value of px
    is %d, value of de-reference to px is %d", &x, x, px,
    *px);
//& - reference; * - dereference
}
```



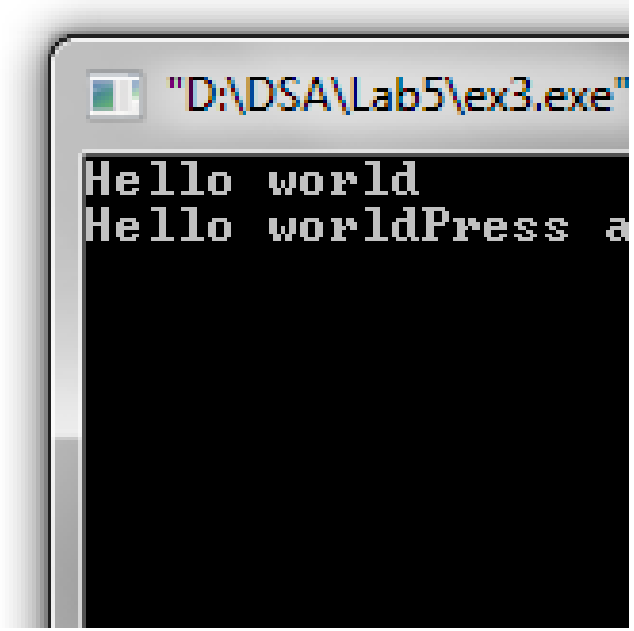
Example 2

```
1  #include<iostream.h>
2  void replace1(int a, int b) {int x=a; a=b; b=x;}
3  void replace2(int &a, int &b) {int x=a; a=b; b=x;}
4  void replace3(int *a, int *b){ int x=*a; *a=*b; *b=x;}
5  int main(){
6      int a=15;
7      int b=30;
8      replace1(a,b);
9      cout<<"a="<<a<<"    "<<"b="<<b<<endl;
10     replace2(a,b);
11     cout<<"a="<<a<<"    "<<"b="<<b<<endl;
12     replace3(&a,&b);
13     cout<<"a="<<a<<"    "<<"b="<<b<<endl;
14 }
15
```



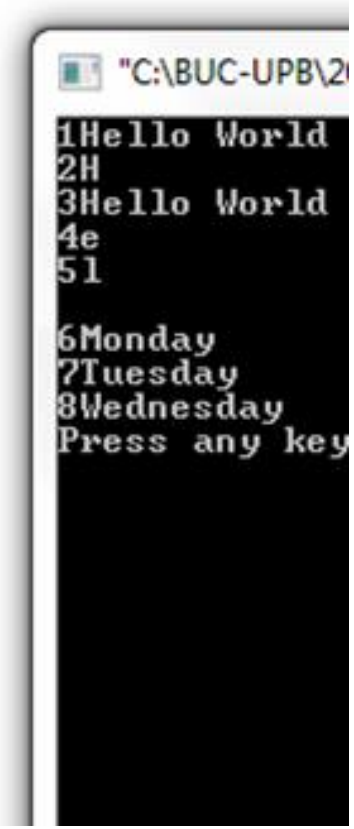
Example 3

```
1  #include<iostream.h>
2  #include<stdio.h>
3  int main(){
4      char s[]="Hello world";
5      char *t="Hello world";
6      char *ps=&s[0]; // *ps=s
7      cout<<ps<<endl;
8  //  *(ps+1)=s[1];
9  //  cout<<ps;
10     while(*ps)
11         printf("%c",*(ps++));
12 }
```



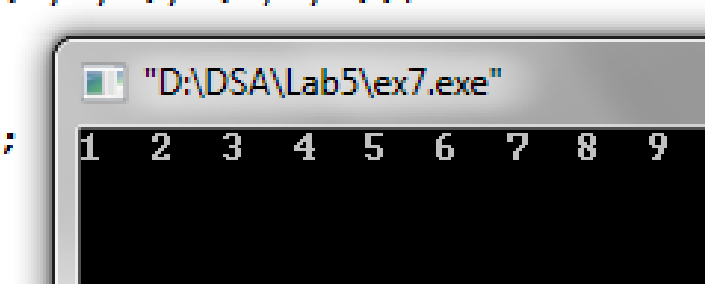
Example 4

```
1 #include <iostream.h>
2 using namespace std;
3 int main()
4 {
5     char s[] = "Hello World";
6     //char *t = &s; //mal
7     char *t = s;
8     cout<<"1"<<t<<endl;
9     cout<<"2"<<*t<<endl;
10    char *ps = &s[0];
11    cout<<"3"<<ps<<endl;
12    cout<<"4"<<*(ps+1)<<endl;
13    cout<<"5"<<*(t+2)<<endl<<endl;
14
15    char *day[] = {"Monday","Tuesday","Wednesday"};
16    char **days = day;
17    cout<<"6"<<*days<<endl;
18    cout<<"7"<<*(days+1)<<endl;
19    cout<<"8"<<*(days+2)<<endl;
20 }
```



Example 5

```
1 #include<iostream.h>
2 #include<conio.h>
3 int main(){
4     int mat[][3]={{1,2,3}, {4,5,6}, {7,8,9}};
5     int *pmat=mat[0];
6     for(int i=0; i<9; i++)
7     printf("%d  ", *pmat++);
8     }
9
```

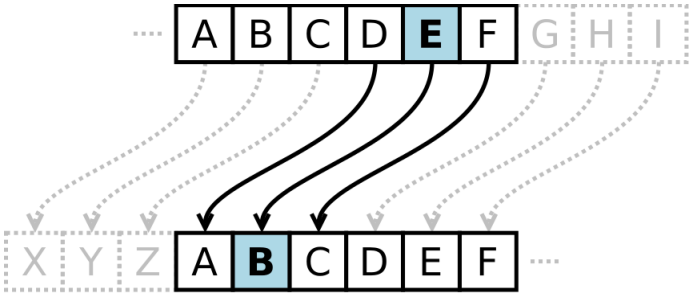


Exercises

- 1. Print the integer elements of an array in the decreasing order with the help of a pointer.
- 2. Display which elements of an array are perfect numbers.

Hint! Perfect number is equal to the sum of its divisors, without the number itself. 6 = 1 + 2 + 3

- 3. Implement the Caesar cypher using pointers.



Homework. Pointers

- 1. Find out the integer and the float part of a number using pointers. Compute the value of a negative float number from base 10 into the base 2.

Hint: use strtok for “.”

- 2. Find the common words for two texts. Compute the frequency of all the words that appear in both documents. Use pointers.

Hint: we consider as sepators “ ,.!?”.

- 3. Write a phrase in “chicken language” (pasareasca).

Ex: Ce faci? = Cepe fapacipi?