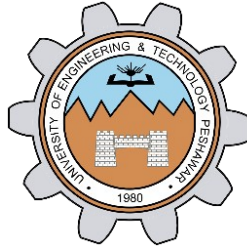


INTRODUCTION TO C PROGRAMMING

LAB # 3



Spring 2020

CSE204L Operating Systems Lab

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“On my honor, as student of University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work.”

Student Signature: _____

Submitted to:

Engr. Mian Ibad Ali Shah

Monday, June 15, 2020

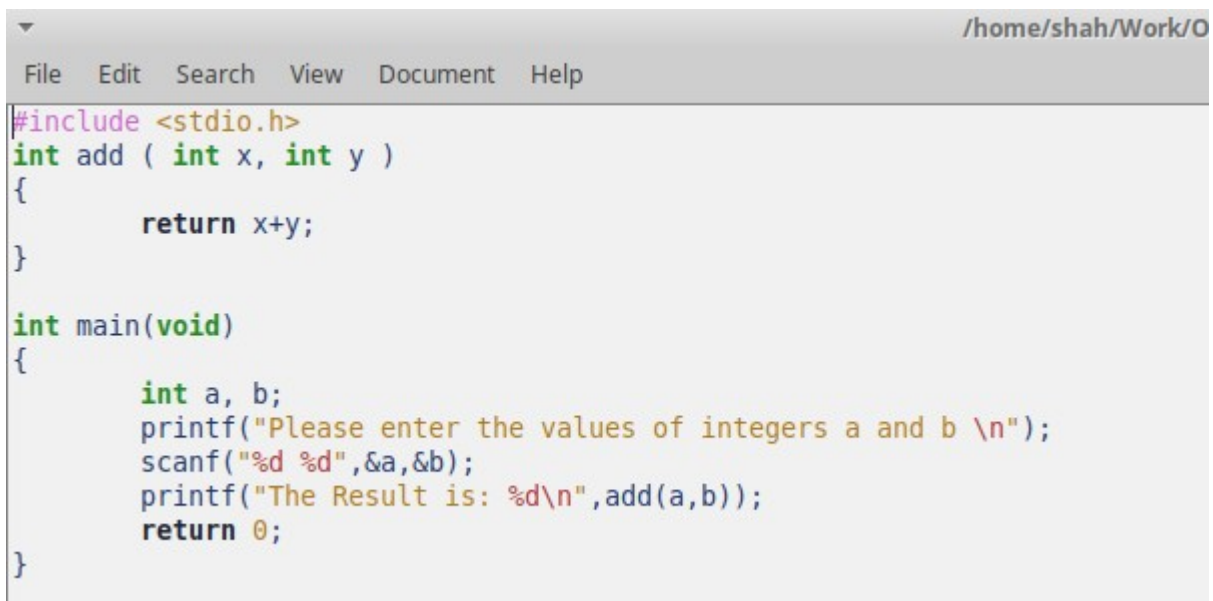
Department of Computer Systems Engineering
University of Engineering and Technology, Peshawar

Lab Objective(s):

- Writing simple c programs with more than one function (Parameters passed by value)
- Basic concepts of Pointers in C
- Passing parameters to the function by pointers.
- Using Arrays in C
- Using Structures in C
- Use of Linked List

Task # 01:

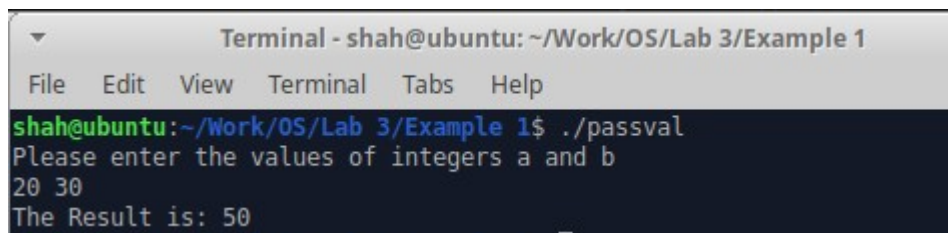
Code:



```
File Edit Search View Document Help
#include <stdio.h>
int add ( int x, int y )
{
    return x+y;
}

int main(void)
{
    int a, b;
    printf("Please enter the values of integers a and b \n");
    scanf("%d %d",&a,&b);
    printf("The Result is: %d\n",add(a,b));
    return 0;
}
```

Output :



```
Terminal - shah@ubuntu: ~/Work/OS/Lab 3/Example 1
File Edit View Terminal Tabs Help
shah@ubuntu:~/Work/OS/Lab 3/Example 1$ ./passval
Please enter the values of integers a and b
20 30
The Result is: 50
```

Task # 02:

Code:

```
File Edit Search View Document Help /home/shah/Work/OS/Lab 3/E

#include <stdio.h>
int main(void){
int a;
int *p;
printf("Enter an Integer: ");
scanf("%d",&a);
p=&a;
printf("The value of the variable a is %d\n",a);
printf("The address of the variable a is %x\n",&a);
printf("The value of variable p is %x\n",p);
printf("The value pointed by p is *P = %d\n",*p);
printf("The address of p is %x\n",&p);
return 0;
}
```

Output :

```
Terminal - shah@ubuntu: ~/Work/OS/Lab 3/E
File Edit View Terminal Tabs Help
shah@ubuntu:~/Work/OS/Lab 3/Example 2$ ./ex2
Enter an Integer: 23
The value of the variable a is 23
The address of the variable a is 3d6588dc
The value of variable p is 3d6588dc
The value pointed by p is *P = 23
The address of p is 3d6588e0
```

Task # 03:

Code:

```
File Edit Search View Document Help /home/shah/Work/OS/Lab 3/E

#include <stdio.h>
void add(int x, int y, int *z){
    *z = x+y; }
main (void) {
    int a, b, r;
    printf ("Enter the values for integers a and b\n") ;
    scanf ("%d %d", &a, &b);
    add(a,b,&r);
    printf ("The result is = %d\n", r);
}
```

Output :

```
Terminal - shah@ubuntu: ~/Work/OS/Lab 3/Example 3
File Edit View Terminal Tabs Help
shah@ubuntu:~/Work/OS/Lab 3/Example 3$ ./ex3
Enter the values for integers a and b
34 76
The result is = 110
```

Task # 04:

Code:

```
/home/shah/Work/
File Edit Search View Document Help
#include<stdio.h>
#define MAX_SIZE 5
void main() {
int first[MAX_SIZE], second[MAX_SIZE], diff[MAX_SIZE], i;
printf("\nEnter %d data items for first array : ", MAX_SIZE);
for(i=0;i<MAX_SIZE; i++)
{
scanf("%d", &first[i] );
}
printf("\nEnter %d data items for second array : ", MAX_SIZE);
for(i=0;i<MAX_SIZE; i++) // input second array
scanf("%d",&second[i]);
for(i=0;i<MAX_SIZE; i++) // compute the differences
diff[i]=second[i] - first[i];
printf("\n\nOutput of the arrays : ");
for(i=0;i<MAX_SIZE; i++) // output the arrays
printf("\n\n%5d %5d %5d", first[i], second[i], diff[i]);
}
```

Output :

```
Terminal - shah@ubuntu: ~/Work/OS/Lab 3/Example 4
File Edit View Terminal Tabs Help
shah@ubuntu:~/Work/OS/Lab 3/Example 4$ gcc ex4.c -o ex4
shah@ubuntu:~/Work/OS/Lab 3/Example 4$ ./ex4
Enter 5 data items for first array : 1 2 3 4 5
Enter 5 data items for second array : 9 8 7 6 5
Output of the arrays :
1      9      8
2      8      6
3      7      4
4      6      2
5      5      0
```

Task # 05:

Code:

```
File Edit Search View Document Help
#include<stdio.h>
main(){
    struct student {
        char name[20];
        int id;
    };
    struct student s1, s2, s3;
    printf("Please enter the student name, and id\n");
    scanf("%s %d", &s1.name, &s1.id);
    scanf("%s %d", &s2.name, &s2.id);
    scanf("%s %d", &s3.name, &s3.id);
    printf("\nThe student details");
    printf("\n%s \t\t%d", s1.name, s1.id);
    printf("\n%s \t\t%d", s2.name, s2.id);
    printf("\n%s \t\t%d\n", s3.name, s3.id);
}
```

Output :

```
Terminal - shah@ubuntu: ~/Work/OS/Lab 3/Example 5
File Edit View Terminal Tabs Help
shah@ubuntu:~/Work/OS/Lab 3/Example 5$ ./ex5
Please enter the student name, and id
Shah 58
Raza 17
Shadab 10

The student details
Shah          58
Raza          17
Shadab        10
```

Task # 06:

Code:

File Edit Search View Document Help

```

#include <stdio.h>
#include <stdlib.h>
#include <string.h>

#define Max_size 50
struct node {
    char *name;
    struct node *next;
};
int count = 0;
typedef enum {false=0,true} Boolean;

void add(char *name, struct node *head)
{
    struct node *n;
    n = (struct node*)malloc(sizeof(struct node));

    if(head==NULL)
    {
        head = n;
        n->name=name;
        n->next = NULL;
        printf("Name %s added to the list.\n",name);
        return;
    }
    count++;

```

```

        while(head->next!=NULL)
            head= head->next;
        head->next = n;
        n->next= NULL;
        printf("Name %s added to the list.\n",name);
    }

Boolean Search(char *name, struct node *head)
{
    if (head == NULL)
        return false;
    while(head!=NULL)
    {
        if(head->name==name)
            return true;
    }
    return false;
}

int main () {
    int i;
    struct node *start = NULL;
    char *name;

    for (;;) {
        printf("1. Add an element to the List.\n");
        printf("2. Search for an element in the list.\n");
        printf("3. Exit\n");

        scanf("%d", &i);

```

```

    if (i == 1) {
        printf("Enter value of element\n");
        scanf("%s", name);
        add(name, start);
    }
    else if (i == 2) {
        printf("Enter value of element\n");
        scanf("%s", name);
        if(Search(name, start))
        {
            printf("Name Found.\n");
        }
        else
            printf("Name not Found.\n");
    }
    else if (i == 3)
        break;
    else
        printf("Please enter valid input.\n");
}

return 0;
}

```

Output :

```

Terminal - shah@ubuntu: ~/Work/OS/Lab 3/Task
File Edit View Terminal Tabs Help
shah@ubuntu:~/Work/OS/Lab 3/Task$ ./LinkedList
1. Add an element to the List.
2. Search for an element in the list.
3. Exit
1
Enter value of element
Shah
Name Shah added to the list.
1. Add an element to the List.
2. Search for an element in the list.
3. Exit
2
Enter value of element
Raza
Name not Found.
1. Add an element to the List.
2. Search for an element in the list.
3. Exit
3

```