Lab 4: Assignment

1) What will be the output of the following program? Note down your understanding of every program, in few sentences.

a)

Answer:

The output of above source cod will be 30 because the value of I is 3 and value of *j is also 3 since the j is the address of I.

i=3

j=address of i

*j=value of j which is 3

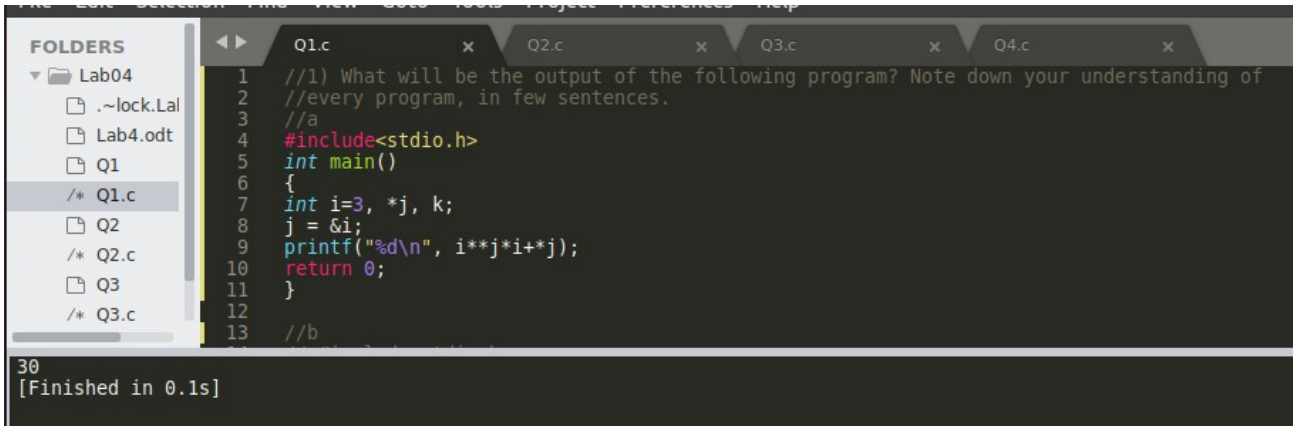
now,

=> i**j*i+*j

=>3*3*3+3

=>30

Output:

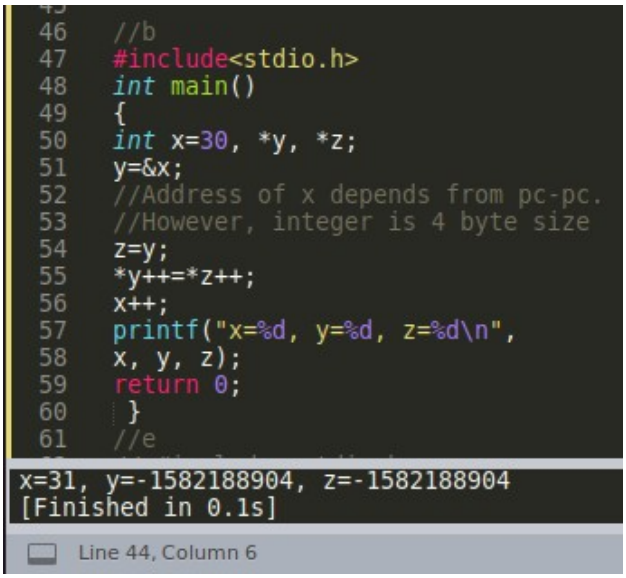


b)

Answer:

In this question x=31 because the x is incremented , y is the address of x that is also incremented by 1 and output of z= to the output of y since z=y and it will be incremented by 1.Hence the value of y and z be equal.

Output:



c)
Answer:
Here i=8 and p is the address of I and output for p* will be 8 since the p is pointed towards I.q is the address of p and p points towards I so the outcome of **p will be 8 and r is the address of q where q is pointed towards p and p is I (pointed towards I) the outcome ***r will be 8.

Outcome:

```c
//c
#include<stdio.h>
int main()
{
int ***r, **q, *p, i=8;
p = &i;
q = &p;
r = &q;
printf("%d, %d, %d\n", *p,
**q, ***r);
return 0;
}
```

```
8, 8, 8
[Finished in 0.1s]
```

d)
Output:

```c
#include<stdio.h>
void fun(void *p);
int i;
int main()
{
void *vptr;
vptr = &i;
fun(vptr);
return 0;
}
void fun(void *p)
{
int **q;
q = (int**)&p;
printf("%d\n", **q);
}
```

```
0
[Finished in 0.1s]
```

e)
Output:

```c
#include <stdio.h>
int main()
{
int *ptr;
int x;
ptr = &x;
*ptr = 0;
printf(" x = %d\n", x);
printf(" *ptr = %d\n", *ptr);
*ptr += 5;
printf(" x = %d\n", x);
printf(" *ptr = %d\n", *ptr);
(*ptr)++;
printf(" x = %d\n", x);
printf(" *ptr = %d\n", *ptr);
return 0;
}
```

```
x = 0
*ptr = 0
x = 5
*ptr = 5
x = 6
*ptr = 6
[Finished in 0.2s]
```

f)
Output:

Q1.c Q2.c

```c
//  }

//f
#include<stdio.h>
int main()
{
char *str;
str = "%s";
printf(str, "K\n");
return 0;
}
```

```
K
[Finished in 0.1s]
```

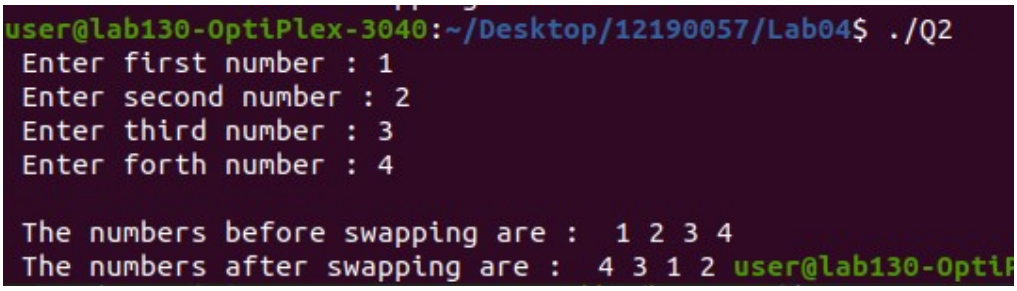
2) Write a C Program to swap 4-different elements using Call by Reference.
Answer:
Source code:

```
#include <stdio.h>

int swap(int *a,int *b,int *c,int *d)
{
   int num;
   num=*a;
   *a=*d;
   *d=*b;
   *b=*c;
   *c=num;
}
int main()
{
   int num1,num2,num3,num4;
   printf(" Enter first number : ");
   scanf("%d",&num1);
   printf(" Enter second number : ");
   scanf("%d",&num2);
   printf(" Enter third number : ");
   scanf("%d",&num3);
   printf(" Enter forth number : ");
   scanf("%d",&num4);

   printf("\n The numbers before swapping are : ");
   printf(" %d %d %d %d",num1,num2,num3,num4);
   swap(&num1,&num2,&num3,&num4);
   printf("\n The numbers after swapping are : ");
   printf(" %d %d %d %d ",num1,num2,num3,num4);
   return 0;
}
```

Output:



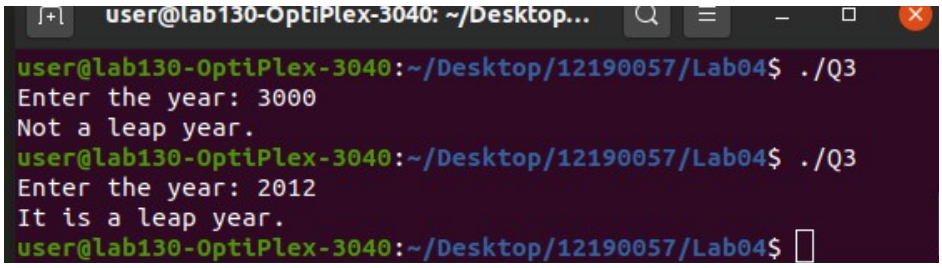
3) WAP a program to find if the Year entered by the user through keyboard is a leap year or not. Apply Call by Reference concept.
Answer:
Source code

```
#include <stdio.h>

int leapYear(int *check, int *x, int *y, int *z){
  if (*check % *x == 0){
    if (*check % *y == 0){
      if (*check % *z == 0){
        printf("It is a leap year.\n");
      }
      else{
        printf("Not a leap year.\n");
      }
    }
    else if (*check % *y != 0){
      printf("It is a leap year.\n");
    }
    else{
      printf("It is not a leap year.\n");
    }
  }
  else if(*check % *y == 0){
    if (*check % *z == 0){
      printf("It is a leap year.\n");
    }
    else{
      printf("It is not a leap year.\n");
    }
  }
  else{
    printf("It is not a leap year.\n");
  }
}


int main(){
  int year;
  int a = 4;
  int b = 100;
  int c = 400;
  printf("Enter the year: ");
```

Output:



Question 4:

```
#include <stdio.h>
void reverseSentence();
int main()
{
  printf("Enter a sentence: ");
  reverseSentence();
  return 0;
}
void reverseSentence(){
        char c;

        scanf("%c", &c);
        if(c != '\n'){
                reverseSentence();
                printf("%c", c);
        }
}
```

Output: