Pointers

Find out the output for the following programs.

1)
```
#include <stdio.h >
int main()
{
      int *p = 10;
      printf(“ %u\n”, (unsigned int)p);
      printf(“%d\n”,*p);
}
```

2)
```
#include <stdio.h>
int main()
{
  int *ptr, a = 10;
  ptr = &a;
  *ptr += 1;
  printf("%d,%d/n", *ptr, a);

}
```

3)
```
#include<stdio.h>
int main()
{
      int x = -300;
      unsigned char *p;
      p = &x;
      printf(“%d\n”,*p++);
      printf(“%d\n”,*p);
}
```

4)
```
#include<stdio.h>
 int main()
 {
      int x = 256;
      char *p = &x;
      *++p = 2;
      printf(“%d”,x);
 }
```

5)
```
#include<stdio.h>
int main()
{
      int x = 300;
      if(*(char *)&x == 44)
      printf(“Little Endian\n”);
      else
      printf(“Big Endian\n”);
}
```

6)
```
#include <stdio.h>
void main()
{
   int x = 0;
   int *ptr = &5;
   printf("%p\n", ptr);
}
```

7)
```
#include<stdio.h>
int main()
{
    int const *p = 5;
    int q;
    p = &q;
    printf(“%d”,++(*p));
}
```

8)
```
#include<stdio.h>
int main()
{
    int x = 10;
    int const * const p;
    p = &x;
    printf(“%d\n”, *p);
}
```

9)
```
#include <stdio.h>
int x = 0;
void main()
{
   int *const ptr = &x;
   printf("%p\n", ptr);
   ptr++;
   printf("%p\n ", ptr);
}
```

10)
```
#include <stdio.h>
int main()
 {
   const int ary[4] = {1, 2, 3, 4};
   int *p;
   p = ary + 3;
   *p = 5;
   printf("%d\n", ary[3]);
}
```

11)
```
#include <stdio.h>
int main()
{
   int ary[4] = {1, 2, 3, 4};
   int *p = ary + 3;
```

```
    printf("%d\n", p[-2]);    }
```

12)
```
#include <stdio.h>
void main()
{
    char *s= "hello";
    char *p = s + 2;
    printf("%c\t%c", *p, s[1]);
}
```

13)
```
#include <stdio.h>
int main()
{
    void *p;
    int a[4] = {1, 2, 3, 4};
    p = &a[3];
    int *ptr = &a[2];
    int n = (int*)p - ptr;
    printf("%d\n", n);
}
```

14)
```
#include<stdio.h>
int main()
{
    int a[ ] = {10,20,30,40,50},i;
    char *p = a;

    for(i=0;i<5;i++)
   printf("%d   ",*p++);
}
```

15)
```
#include<stdio.h>
int main()
{
    int a[]={10,20,30,40,50};
    char *p;
    p=(char *)a;
    printf("%d\n",*((int *)p+4));
}
```

16)
```
#include <stdio.h>
int main()
{
    double *ptr = (double *)100;
    ptr = ptr + 2;
    printf("%u\n", ptr);
}
```

17)
```
#include <stdio.h>
int main()
{
```

```
    int i = 10;
    void *p = &i;
    printf("%d\n", (int *)*p);
  // printf("%d\n", *(int*)p);
    return 0;
}
```

18)
```
#include <stdio.h>
int main()
{
    int a[4] = {1, 2, 3, 4};
    void *p = &a[1];
    void *ptr = &a[2];
    int n = 1;
    n = ptr - p;
    printf("%d\n", n);
}
```

19)
```
#include <stdio.h>
int main()
{
    int *p = (int *)2;
    int *q = (int *)3;
    printf("%d", p + q);
}
```

20) Which of the following operand can be applied to pointers p and q?
(Assuming initialization as int *a = (int *)2; int *b = (int *)3;)

a) a + b
b) a – b
c) a * b
d) a / b

Ans: b)

21) Which of following logical operation can be applied to pointers?
(Assuming initialization int *a = 2; int *b = 3;)

a) a | b
b) a ^ b
c) a & b
d) None of the mentioned

Ans: d)

22)
```
#include <stdio.h>
void main()
{
    char *s = "hello";
    char *n = "cjn";
    char *p = s + n;
  4 printf("%c\t%c", *p, s[1]);
}
```

23)
```
#include <stdio.h>
void m(int *p)
{
   int i = 0;
   for(i = 0;i < 5; i++)
   printf("%d\t", p[i]);
}
void main()
{
   int a[5] = {6, 5, 3};
   m(&a);
}
```

24)
```
#include <stdio.h>
void foo(int*);
int main()
{
   int i = 10,j=20,*p = &i;
   foo(p++);
      foo(p);
}
void foo(int *p)
{
   printf("%d\n", *p);
}
```

25)
```
#include <stdio.h>
int main()
{
   int i = 97, *p = &i;
   foo(&i);
   printf("%d ", *p);
}
void foo(int *p)
{
   int j = 2;
   p = &j;
   printf("%d ", *p);
}
```

26)
```
#include<stdio.h>
int main()
{
   const int ary[4] = {1,2,3,4};
   int *p = ary+3;
   *p = 5;
   ary[3] = 6;
   printf(“%d”,ary[3]);
}
```

27)
```
#include<stdio.h>
```

```
int main()
{
    char *p = “Hai friends”,  *p1 = p;
    while(*p!='\0');
    ++*p++;
    printf(“%s  %s\n”,p,p1);
}
```

28)
```
#include<stdio.h>
int main()
{
    char *x = “VECTOR”;
    printf(“%s\n”,x+3);
    printf(“%d\n”+1,123456);
}
```

29)
```
#include<stdio.h>
int main()
{
    char a[ ] = “abcdefgh”;
    int *ptr = a;
    printf(“%x  %x\n”,ptr[0],ptr[1]);
}
```

30)
```
#include<stdio.h>
 #include<string.h>
int main()
{
    char *str = "hello, world\n";
    char *strc = "good morning\n";
    strcpy(strc, str);
    printf("%s\n", strc);
    return 0;
}
```

31)
```
#include <stdio.h>
int main()
{
    char *str = "hello world";
    char strc[50] = "good morning india\n";
    strcpy(strc, str);
    printf("%s\n", strc);
    return 0;
}
```

32)
```
#include <stdio.h>
int main()
{
    char *str = "hello, world\n";
    str[5] = '.';
```

```
    printf("%s\n", str);
    return 0;
}
```

33)
```
#include <stdio.h>
int main()
{
    char str[] = "hello, world";
    str[5] = '.';
    printf("%s\n", str);
    return 0;
}
```

34)
```
#include <stdio.h>
int main()
{
    char *str = "hello world";
    char strary[] = "hello world";
    printf("%d %d\n", sizeof(str), sizeof(strary));
    return 0;
}
```

35)
```
#include <stdio.h>
int main()
{
    char *str = "hello world";
    char strary[] = "hello world";
    printf("%d %d\n", strlen(str), strlen(strary));
    return 0;
}
```

36)
```
#include<stdio.h>
int main()
{
    int a = 5,b = 4,c = 9;
    *(a>b ? &a : &b) = (a+b)>c;
    printf("%d  %d\n",a,b);
}
```

37) Find the sizeof any datatype with out using sizeof operator. (Hint : Use pointers)

38)
```
#include<stdio.h>
int main()
{
    int i;
    double a = 5.2;
    char *ptr;
    ptr = (char *)&a;
    for(i=0;i<=7;i++)
    printf("%d\n",*ptr++);
    return 0;
}
```

39) Correct the following program.

```
#include<stdio.h>
 int main()
 {
        void *p;
       int  **ptr;
       int a = 129;
        p = &a;
       ptr = &p;
        printf(“ p = %d   p = %u  &p = %u\n”, *p, p, &p);
}
```

40)
```
#include<stdio.h>
main()
{
    char a[20];
    char *p,*q;
    p=&a[0];
    q=&a[10];
    printf("%d %d\n",q-p,&q-&p);
}
```

41)
```
#include<stdio.h>
 main()
 {
      int a=0x12345678;
       void *ptr;
       ptr=&a;
       printf("0x%x\n",*(int *)&*&*(char*)ptr);
 }
```

42)
```
#include<stdio.h>
main()
{
    int a[5]={1,2,3,4,5};
    int *ptr=(int *)(&a+1);
    printf("%d %d\n",*(a+1),*(ptr-1));
    printf("%d %d\n",*(a+1),*(ptr));
}
```

43)
```
#include <stdio.h>
  void main()
  {
    char *s= "hello";
    char *p = s;
    printf("%c\t%c", 1[p], s[1]);
  }
```

44)
```
#include<stdio.h>
 main()
```

```
{
    char a[]="abcde";
    char *p=a;
    p++;
    p++;
    p[2]='z';
    printf("%s",p);
}
```

45)
```
#include<stdio.h>
main()
 {
        char a[]="ABCDEFGHIJKLMNOPQRSTUVWXYZ";
       int i,*p = a;
       for(i=0;i<5;i++)
       printf("%d\t",*p++);
 }
```

46)
```
#include<stdio.h>
  main()
  {
        char a[]="abcdef";
        char *ptr1 = a;
        ptr1 = ptr1+(strlen(ptr1)-1);
        printf("%c", --*ptr1--);
        printf("%c",--*--ptr1);
        printf("%c",--*(ptr1--));
        printf("%c",--*(--ptr1));
        printf("%c",*ptr1);
}
```

47)
```
#include<stdio.h>
int main()
{
        char *str1 = "Hello";
        char *str2 = "Hai";
        char *str3;
        str3 = strcat(str1,str2);
        printf("%s  %s\n",str3,str1);
        return 0;
}
```

48)
```
#include<stdio.h>
int main()
{
        char a[]="Hello";
        char *p="Hai";
        a="Hai";
        p="Hello";
        printf("%s  %s\n",a,p);
        return 0;
}
```

49)
```
#include<stdio.h>
int main()
{
        int i,n;
        char *x=”Alice”;
        n=strlen(x);
        *x=x[n];
        for(i=0;i<=n;i++)
        {
                printf(“%s”,x);
                x++;
        }
        printf(“%s\n”,x);
        return 0;
}
```

50)
```
#include<stdio.h>
char *str=”char *str=%c%s%c;main(){printf(str,34,str,34);}”;
int main()
{
        printf(str,34,str,34);
        return 0;
}
```

51)
```
#include <stdio.h>
void f(char *k)
{
   k++;
   k[2] = 'm';
   printf("%c\n", *k);
}
void main()
{
   char s[] = "hello";
   f(s);
   printf("%s\n",s);
}
```

52)
```
#include<stdio.h>
void t1(char *q);
main()
{
        char *p;
        p = “abcder”;
        t1(p);
}
void t1(char *q)
{
        if(*q!='r')
        {
```

```
                putchar(*q);
                t1(q++);
            }
    }
```

53)
```
#include<stdio.h>
int main(){
int i;
float a=5.2;
char *ptr;
ptr=(char *)&a;
for(i=0;i<=3;i++)
printf("%d ",*ptr++);
return 0;
}
```

54)
```
#include <stdio.h>
void foo( int[] );
int main()
{
   int ary[4] = {1, 2, 3, 4};
   foo(ary);
   printf("%d ", ary[0]);
}
void foo(int p[4])
{
   int i = 10;
   p = &i;
   printf("%d ", p[0]);
}
```

55)
```
#include <stdio.h>
void main()
{
   int k = 5;
   int *p = &k;
   int **m  = &p;
    **m = 10;
   printf("%d%d%d\n", k, *p, **m);
}
```

56)
```
#include <stdio.h>
int main()
{
   int a = 1, b = 2, c = 3;
   int *ptr1 = &a, *ptr2 = &b, *ptr3 = &c;
   int **sptr = &ptr1;
      printf("%d  ",**sptr);
   *sptr = ptr2;
      printf(("%d  ",**sptr);
}
```

57)
```
#include <stdio.h>
void main()
{
   int a[3] = {1, 2, 3};
   int *p = a;
   int *r = &p;
   printf("%d\n", (**r));
}
```

58)
```
#include <stdio.h>
int main()
{
   int i = 97, *p = &i;
   foo(&p);
   printf("%d ", *p);
   return 0;
}
void foo(int **p)
{
   int j = 2;
   *p = &j;
   printf("%d ", **p);
}
```

59)
```
#include <stdio.h>
void foo(int *const *p);
int main()
{
   int i = 11;
   int *p = &i;
   foo(&p);
   printf("%d ", *p);
}
void foo(int *const *p)
{
   int j = 10;
   *p = &j;
   printf("%d ", **p);
}
```

60)
```
#include <stdio.h>
void foo(int **const p);
int main()
{
   int i = 10;
   int *p = &i;
   foo(&p);
   printf("%d ", *p);
}
void foo(int **const p)
```

```
{
   int j = 11;
   *p = &j;
   printf("%d ", **p);
}
```

61)
```
#include <stdio.h>
int *f();
int main()
{
    int *p = f();
    printf("%d\n", *p);
}
int *f()
{
    int *j = (int*)malloc(sizeof(int));
   *j = 10;
    return j;
}
```

62)
```
#include <stdio.h>
void main()
{
   char *a[10] = {"hi", "hello", "how"};
   int i = 0;
   for (i = 0;i < 10; i++)
   printf("%s  ", *(a[i]));
}
```

63)
```
#include <stdio.h>
void main()
{
   char *a[10] = {"hi", "hello", "how"};
   int i = 0, j = 0;
   a[0] = "hey";
   for (i = 0;i < 10; i++)
   printf("%s  ", a[i]);
}
```

64)
```
#include <stdio.h>
void main()
{
   char *a[10] = {"hi", "hello", "how"};
   printf("%d\n", sizeof(a));
}
```

65)
```
#include <stdio.h>
void main()
{
   char *a[10] = {"hi", "hello", "how"};
   printf("%d\n", sizeof(a[1]));
}
```

66)
```
#include <stdio.h>
int main()
{
   char a[2][6] = {"hello", "hi"};
   printf("%s  ", *a + 1);
   return 0;
}
```

67)
```
#include <stdio.h>
int main()
{
   char *a[2] = {"hello", "hi"};
   printf("%s\n", *(a + 1));
   return 0;
}
```

68)
```
#include <stdio.h>
int main(int argc, char *argv[])
{
   while (argc--)
   printf("%s\n", argv[argc]);
   return 0;
}
```

69)
```
#include <stdio.h>
int main(int argc, char *argv[])
{
   while (*argv++ != NULL)
   printf("%s\n", *argv);
   return 0;
}
```

70)
```
#include <stdio.h>
int main(int argc, char *argv[])
{
   while (*argv  !=  NULL)
   printf("%s\n", *(argv++));

  return 0;
}
```

71)
```
#include<stdio.h>
int main(int sizeofargv, char *argv[])
{
        while(sizeofargv)
        printf("%s  ",argv[--sizeofargv]);
        return 0;
} if i/p is   sample  friday tuesday sunday
```

72)
```
#include<stdio.h>
```

```
int main()
{
        char *str[]={“Progs”,”Do”,”Not”,”Die”,”They”,”Croak!”};
        printf(“%d  %d”,sizeof(str),strlen(str[0]));
        return 0;
}
```

73)
```
#include<stdio.h>
int main()
{
        static char *s[]={“black”,”white”,”pink”,”violet”};
        char **ptr[]={s+3,s+2,s+1,s},***p;
        p = ptr;
        printf(“%s\n”,**p+1);
        return 0;
}
```

74)
```
#include<stdio.h>
main()
{
        char *m[]={“jan”,”feb”,”mar”};
        char d[][10] = {“sun”,”mon”,”tue”};
        printf(“%s\t”,m[1]);
        printf(“%s\t”,d[1]);
}
```

75)
```
#include<stdio.h>
void fun(char **);
int main()
{
        char *argv[]={“ab”,”cd”,”ef”,”gh”};
        fun(argv);
        return 0;
}
void fun(char **p)
{
        char *t;
        t=(p+=sizeof(int))[-1];
        printf(“%s\n”,t);
}
```

76)
```
#include <stdio.h>
void first()
{
   printf("first");
}
void second()
{
   first();
}
void third()
{
```

```
    second();
}
void main()
{
    void (*ptr)();
    ptr = third;
    ptr();
}
```

77)
```
#include <stdio.h>
int add(int a, int b)
{
    return a + b;
}
int main()
{
    int (*fn_ptr)(int, int);
    fn_ptr = add;
    printf("The sum of two numbers is: %d\n", (int)fn_ptr(2, 3));
}
```

78)
```
#include <stdio.h>
int mul(int a, int b, int c)
{
    return a * b * c;
}
void main()
{
    int (*function_pointer)(int, int, int);
    function_pointer  =  mul;
    printf("The product of three numbers is:%d",
    function_pointer(2, 3, 4));
}
```

79)
```
#include<stdio.h>
int fun(int (*)());
int main()
{
        fun(main);
        printf(“Hi\n”);
        return 0;
}
int fun(int (*p)())
{
        printf(“Hello\n”);
        return 0;
}
```

80)
```
#include<stdio.h>
int main()
{
        char *p = “Hello World”;
```

```
        printf(p);
    }
```
---------- END ----------

Dear Students, if any mistakes found, Kindly inform to me.

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