CS & IT ENGINEERING

C-Programming

Function and Storage
Discussion Notes

DPP-03

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Question

#Q. Consider the following C program:

```
#include<stdio.h>
int x=12;
int f1() { int x = 25; x++; return x;}
int f2 () {static int x = 50; x++; return x;}
int f3() { x *= 10; return x;}
int f4(int a, int b , int c , int d) {  return a+b+c+d;}
int main()
{
    int x=1;
    x += f4(f1(),  f2() , f3() , f2());
    printf("%d", x);
    return 0;
}
```

The output of the program is

A 229

B 250

C 230

D 228

Question

#Q. Consider the following C program:

```
#include<stdio.h>
int x=12;
int f1() { int x = 25; x++; return x;}
int f2 () {static int x = 50; x++; return x;}
int f3() { x *= 10; return x;}
int f4(int a, int b , int c , int d) {  return a+b+c+d;}
int main()
{
   int x=1;
   x += f4(f1(),  f2() , f3() , f2());
   printf("%d", x);
   return 0;
}
```

The output of the program is

26
51
120
52

249

$x = 1 + f_4(f_1(), f_2(), f_3(), f_2())$

$1 + f_4(26, 51, 120, 52)$

$x = 1 + 249 = 250$

$\boxed{x = 250}$ Ans

Question

#Q.

```
#include<stdio.h>
int x=12;
int f1() { int x = 25; x++; return x;}
int f2() {static int x = 50; x++; return x;}
int f3() { x *= 10; return x;}
int f4(int a, int b , int c , int d)
{
    static int x = 10;
    x=x+10;
    return x+a+b+c+d;
}
int main()
{
int x=1;
    x += f4(f1(), f2() , f3() , f2());
    x += f4(f1(), f2() , f3() , f2());
    printf("%d", x);
    return 0;
}
```

20
26
51
120
52

269

$x = 1 + f_4(26, 51, 120, 52)$

$x = 1 + 269 = 270$

$x = 270 + f_4(26, 53, 1200, 54)$

30
26
53
1200
1154

1363

$x = 270 + 1363$

$x = 1633$

The output of the program is 1633

Question

#Q. The value of j at the end of the execution of the following C program

```
#include<stdio.h>
int foo (int j)
{
    static int x = 0;
    x = x + j;
    return x;
}
int main ()
{
    int i,j;
    for (i = 0; i <=4; i++)
    {
        j = foo(i)+foo(i);
    }
return 0;
}
```

	x
i = 0	0
i = 1	2
i = 2	6
i = 3	12
i = 4	20

j = foo(i) + foo(i)

j = 0 + 0 = 0

j = foo(1) + foo(1) = 3
(1 + 2)

j = foo(2) + foo(2) = 10
(4 + 6)

j = foo(3) + foo(3) = 21
(9 + 12)

j = foo(4) + foo(4) = 36
(16 + 20)

final value of j is 36

Question

#Q. Consider the following program

```
#include<stdio.h>
int foo (int j)
{
    static int x = 0;
    x = x + j;
    return x;
}
int main ()
{
    int i,j;
    for (i = 0; i <=4; i++)
    {
        j = foo(i)-foo(i);
    }
    printf("%d", j);
    return 0;
}
```

The value printed by the program is

$J = foo(i) + foo(i)$ $x = 0$

$i = 0$ $J = foo(0) + foo(0)$ $x = 0$

$i = 1$ $J = foo(1) - foo(1)$ $x = 1+1 = 2$

$1 - 2 = -1$

$i = 2$ $J = foo(2) - foo(2)$ $x = 4\ 6$

$4 - 6 = -2$

$i = 3$

$i = 4$ $J = foo(3) - foo(3)$ $x = 9\ 12$

$9 -$

$J = foo(4) - foo(4)$ $x = 16\ 20$

$16 - 20 = -4$

→ the value printed by program is -4

Question

#Q.

```
#include<stdio.h>
int foo(int y)
{
    static int x = 1;
    x++;
    return x+y;
}
int bar(int i)
{
    return ++i;
}
int main()
{
    int x,y=0
    x = foo(bar(10))+y;
    y = foo(bar(11))+x;
    printf("%d\n", (x+y));
    return 0;
}
```

The output of the program is ____

foo bar

x = foo(bar(10)) + 0
  = foo(11) + 0
  = 13 + 0 = 13

y = foo(bar(11)) + 13
  = foo(12) + 13 = 15 + 13 = 28

28 + 13 = 41

Ans = 41

Question

#Q.

```
#include<stdio.h>
int foo(int y)
{
    static int x = 1;
    x++;
    return x+y;
}
int bar(int i)
{
    static int x =12;
    x++;
    return i+x;
}
int main()
{
    int x,y=0;
    x = bar(foo(10))+y;
    y = bar(foo(11))+x;
    printf("%d\n", (x+y));
    return 0;
}
```

Output of the program is _____.

x = bar(foo(10)) + 0

= bar(12) + 0 = 25 + 0

y = bar(foo(11)) + 25

= bar(14) + 25 = 28 + 25 = 53

2 3

13 14

25

14 + 14 = 28

25 + 53 = 78

Answer is 78

Question

#Q.

```
#include<stdio.h>
int fun(int y)
{
    static int x = 20;
    x++;
    return x;
}
int main()
{
    int x,y;
    x = fun(20);
    y = fun(20);
    printf("%d\n", (x+y));
    return 0;
}
```

Output of the program is ____.

x = 20
x = 21
  = 22

x = fun(20)

x = 21;

y = fun(20)

y = 22

printf (21+22) = 43

output of program is 43

Question

#Q.
```
#include<stdio.h>
int fun(int y){
   static int x = 20;
   x++;
   return x+y;

}
int main(){
int x,y,z;
x = fun(20);
y = fun(22);
z = fun(fun(20));
printf("%d\n", (x+y+z));
return 0;
}
```

Output of the program is ____.

~~21~~ ~~21~~ ~~22~~ ~~23~~ 24

~~21~~ 21 + 20 = 41

22 + 22 = 44

23 + 20 = 43

43 + 24 = 67

$x = fun(20) = 41$

$y = fun(22) = 44$

$z = fun(fun(20)) = fun(43)$

$= 67$

$x + y + z = 41 + 44 + 67 = 152$

152

THANK - YOU