Write the answers with explanation.

1. Consider the following program in C language:

#include <stdio.h>

main()

{

    int i;

    int \*pi = &i;

    scanf("%d", pi);

    printf("%d\n", i+5);

}

Which one of the following statements is TRUE?

(A) Compilation fails.

(B) Execution results in a run-time error.

(C) On execution, the value printed is 5 more than the address of variable i.

(D) On execution, the value printed is 5 more than the integer value entered.

1. Consider the function func shown below:

int func(int num)

{

    int count = 0;

    while (num)

    {

        count++;

        num >>= 1;

    }

    return (count);

}

The value returned by func(435)is \_\_\_\_\_\_\_\_\_\_.

1. Consider the C function given below.

int f(int j)

{

  static int i = 50;

  int k;

  if (i == j)

  {

    printf("something");

    k = f(i);

    return 0;

  }

  else return 0;

}

Which one of the following is TRUE?

(A) The function returns 0 for all values of j.

(B) The function prints the string something for all values of j.

(C) The function returns 0 when j = 50.

(D) The function will exhaust the runtime stack or run into an infinite loop when j = 50

1. Consider the C function given below. Assume that the array listA contains n (> 0) elements, sorted in ascending order.

int ProcessArray(int \*listA, int x, int n)

{

int i, j, k;

i = 0;

j = n-1;

do{

k = (i+j)/2;

if (x <= listA[k])

j = k-1;

if (listA[k] <= x)

i = k+1;

} while (i <= j);

if (listA[k] == x)

return(k);

else

return -1;

}

Which one of the following statements about the function ProcessArray is CORRECT?

(A) It will run into an infinite loop when x is not in listA.

(B) It is an implementation of binary search.

(C) It will always find the maximum element in listA.

(D) It will return -1 even when x is present in listA.

1. Consider the following function

double f(double x)

{

   if (abs(x\*x - 3) < 0.01) return x;

   else return f(x/2 + 1.5/x);

}

Give a value q (to 2 decimals) such that f(q) will return q:\_\_\_\_\_.

1. What will be the output of the following C program segment?

char inchar = 'A';

switch (inchar)

{

case 'A' :

    printf ("choice A \n") ;

case 'B' :

    printf ("choice B ") ;

case 'C' :

case 'D' :

case 'E' :

default:

    printf ("No Choice") ;

}

(A) No choice

(B) Choice A

(C) Choice A Choice B No choice

(D) Program gives no output as it is erroneous

1. Consider the following C program

int a, b, c = 0;

void prtFun (void);

int main ()

{

    static int a = 1; /\* line 1 \*/

    prtFun();

    a += 1;

    prtFun();

    printf ( "\n %d %d " , a, b) ;

}

void prtFun (void)

{

    static int a = 2; /\* line 2 \*/

    int b = 1;

    a += ++b;

    printf (" \n %d %d " , a, b);

}

What output will be generated by the given code segment?

(A) 3 1

4 1

4 2

(B) 4 2

6 1

6 1

(C) 4 2

6 2

2 0

(D) 3 1

1. 2

5 2

1. **What output will be generated by the given code d\segment if:   
   Line 1 is replaced by “auto int a = 1;”   
   Line 2 is replaced by “register int a = 2;”**

(A) 3 1   
4 1   
4 2   
(B) 4 2   
6 1   
6 1   
(C) 4 2   
6 2   
2 0   
(D) 4 2   
4 2   
2 0

1. What does the following program print?

#include<stdio.h>

void f(int \*p, int \*q)

{

p = q;

\*p = 2;

}

int i = 0, j = 1;

int main()

{

f(&i, &j);

printf("%d %d \n", i, j);

getchar();

return 0;

}

(A) 2 2

(B) 2 1

(C) 0 1

(D) 0 2

10. What is the value printed by the following C program?

#include<stdio.h>

int f(int \*a, int n)

{

if(n <= 0) return 0;

else if(\*a % 2 == 0) return \*a + f(a+1, n-1);

else return \*a - f(a+1, n-1);

}

int main()

{

int a[] = {12, 7, 13, 4, 11, 6};

printf("%d", f(a, 6));

getchar();

return 0;

}

(A) -9

(B) 5

(C) 15

(D) 19