

## TCS NINJA - PROGRAMMING LOGIC SET 1

1. What is the value of **result** in the following C program?

```
int a = -10, b = -5, flag = 1, result = 0, i;
int x = abs(a); int y = abs(b);
for(i=1; i<=x; i++)
    result += y;
if((a>=0 && b<0) || (a<0 && b>=0))
    flag = -1;
result *= flag;
```

### Solution:

What is the value of **result** in the following C program?

```
int a = -10, b = -5, flag = 1, result = 0, i;
int x = abs(a); int y = abs(b);  x = 10  y = 5  i = 1 2 3 4 5 6 7 8 9 10 11
for(i=1; i<=x; i++)
    result += y;  result = 0 + 5
if((a>=0 && b<0) || (a<0 && b>=0))  = 5 + 5
    flag = -1;  = 10 + 5  45 + 5
result *= flag;  = 15 + 5  50
                = 20 + 5  =
                = 25 + 5
                = 30 + 5
                = 35 + 5
                = 40 + 5

50
```

2. The following program is supposed to find the number of terms in the array num\_array. What should be written in the missing last part before the while loop's closing brace?

P.S. In the actual TCS NQT, this would be a FUB question, where you must write your answer without any leading, trailing, interspersed blank spaces or semicolons.

```
int num_array[ ] = {17, 20, 23, 26, 29, 32, 35};
int count = 0;
while (count < sizeof(num_array)/ num_array[0])
{
    printf("%d", num_array[count]);
```

//Replace this commented line with the required C statement. No semicolon.

```
}  
printf("There are %d elements in the array \n", count);
```

### Solution:

The following program is supposed to find the number of terms in the array **num\_array**. What should be written in the missing last \_\_ before the while loop's closing brace? Write your answer **without any leading, trailing, interspersed blank spaces or semicolons**.

```
int num_array[] = {17, 20, 23, 26, 29, 32, 35};
```

```
int count = 0; 1 2 3 4 5 6 7
```

```
while (count < sizeof(num_array)/ num_array[0])
```

```
{  
    printf("%d", num_array[count]);
```

```
    //Replace this commented line with the required C statement. No  
    semicolon. count++
```

```
}  
printf("There are %d elements in the array \n", count);
```

*28/4 = 7*

*17 20 23 26 29 32 35*

3. What's the output of the following program segment?

```
int i;  
for (i=3; i<=300; i+=3);  
printf("%d", i);
```

### Solution:

What's the output of the following program segment?

```
int i;  
for (i=3; i<=300; i+=3);  
printf("%d", i);
```

```
for (i=1; i<=5; i++)  
{  
    printf("%d", i);  
}
```

```
for (i=3; i<=300; i+=3)
```

```
{
```

```
}
```

*303*

*3 6 9 12 ... 300*

*6/9/12 ... 300 303*

4. The output when the following code is executed is

```
#include<stdio.h>
int main(){
int x=2;
if(x--, --x, x)
printf("TCS TNQT exam");
else
printf("TCS Ninja exam");
return 0;
}
```

- a. Compilation error - invalid if statement  
c. Run time error

- b. TCS Ninja exam  
d. TCS TNQT exam

**Solution:** b. TCS Ninja exam

The output when the following code is executed is

```
#include<stdio.h>
int main(){
int x=2;
if(x--, --x, x)
printf("TCS TNQT exam");
else
printf("TCS Ninja exam");
return 0;
}
```

*Handwritten notes:*  
if ( , , )  
x-- 2  
--x 0  
x=7 1

5. What's the total number of integers that are duplicates in the array results?

P.S. In the TCS NQT, this would be a FUB question you must write your answer as a numeric value.

```
int i, j, results[20];
for(i=1,j=0; i<=20; i++) {
if((i%3) == 0)
results[j++] = i;
if((i%6) == 0)
results[j++] = i;
}
```

### Solution:

What's the total number of integers that are duplicates in the array results?

Write your answer as a numeric value.

```
int i, j, results[20];
for(i=1; j=0; i<=20; i++) {
    if((i%3) == 0)
        results[j++] = i;
    if((i%6) == 0)
        results[j++] = i;
}
```

*i = 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20*  
*j = 0 1 2 3 4 5 6 7 8 9*

	0	1	2	3	4	5	6	7	8	...	...	...	19
results[j]	3	6	6	9	12	12	15	18	18				

*3*

6. What is the value of minimum, if the following segment runs to completion?

```
#include<limits.h>
int main()
{
    int i=0, minimum = INT_MIN;
    int number[] = {23, 48, 98, 1, 6, 8, 200, 10},
    while (i < sizeof(numbers)/sizeof(numbers[0])) {
        if(minimum > numbers[i]) minimum = numbers[i]; i++;
    }
}
```

### Solution:

What is the value of minimum, if the following segment runs to completion?

*-2147483648 to +2147483647*  
*i = 0*

```
#include<limits.h>
int main()
{
    int i=0, minimum = INT_MIN;
    int number[] = {23, 48, 98, 1, 6, 8, 200, 10},
    while (i < sizeof(numbers)/sizeof(numbers[0])) {
        if(minimum > numbers[i]) minimum = numbers[i]; i++;
    }
}
```

*32 / 4 = 8*

*-2147483648 i = 0*

7. What is the output of the following Java program?  
P.S. In the actual TCS NQT, this would be a FUB question.

```
Class Super
{
    Static String greeting() {return "Goodnight";}
    String name() {return "Ram";}
}
Class Sub extends Super
{
    Static String greeting () {return "Hello";}
    String name() {return "Bheem";}
}
Public static void main {String[]args)
{
    Super s=new Sub();
    System.outprintln(s.greeting()+",""+s.name());
}
}
```

**Solution:**

What is the output of the following Java program?

```
Class Super
{
    Static String greeting() {return "Goodnight";}
    String name() {return "Ram";}
}
Class Sub extends Super
{
    Static String greeting () {return "Hello";}
    String name() {return "Bheem";}
}

Public static void main {String[]args)
{
    Super s=new Sub();
    System.outprintln(s.greeting()+",""+s.name());
}
}
```

*Goodnight, Bheem*

8. What's the output of the following Java program?

```
public class MyThread extends Thread
{
    public void run()
    {
        System.out.println("Before");
        this.stop();
        System.out.println("After");
    }
}

public static void main (String[]args)
{
    MyThread a=new MyThread();
    a.start();
} }
```

**Solution:**

What is the output of the following Java program?

```
public class MyThread extends Thread
{
    public void run()
    {
        System.out.println("Before");
        this.stop();
        System.out.println("After");
    }
}

public static void main (String[]args)
{
    MyThread a=new MyThread();
    a.start();
} }
```

*Before*

9. Given the following function definition

```
int mystery1(int x, int y) {
    if(x<=y) return x;
    else
    return mystery1(x-y, y);
}
```

What would be the return value of this function call mystery1(15,5)?

- a. 10                      **b. 5**                      c. 15                      d. 0

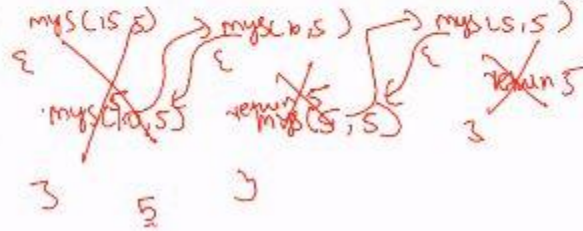
**Solution:** b. 5

Given the following function definition

```
int mystery1(int x, int y) {  
    if(x<=y) return x;  
    else  
    return mystery1(x-y, y);  
}
```

What would be the return value of this function call `mystery1(15,5)`?

- A) 10
- B) 5**
- C) 15
- D) 0



10. The for loop below computes  $97+94+91+\dots+4$ .

Replace the question mark (???) appropriately to complete the code snippet.

P.S. In the TCS NQT, this would be a FUB question. Your answer must not contain any blank space.

```
int i = 97, sum;
```

```
for (sum = 0; i >= 4; i = ???) sum += i;
```

**Solution:**

The for loop below computes  $97+94+91+\dots+4$ .

Replace the question mark (???) appropriately to complete the code snippet.

```
int i = 97, sum;
```

```
for (sum = 0; i >= 4; i = i-3) sum += i;
```

Your answer should not contain any blank space.

Handwritten notes for the for loop: `for (sum = 0; i >= 4; i = i-3)` and `sum = sum + i`. The value `i-3` is written above the loop condition, and `i - 3` is written below it with a checkmark.

11. Consider the following code

```
int HIGH = 21; int num = 16;
```

```
while(num<HIGH) {
```

```
    if (num%3 == 0)
```

```
        printf("%d", (num+1));
```

```
    num++;
```

```
}
```

The output of the above code after execution is:



P.S. In the actual TCS NQT, this would have been a FUB question.

**Solution:**

Consider the following code

```
int HIGH = 21; int num = 16;
while(num<HIGH) {
    if (num%3 == 0)
        printf("%d", (num+1));
    num++;
}
```

num: 16 17 18 19 20 21  
high: 21  
19

The output of the above code after execution is:

12. In a class diagram, there is an arrow that starts at A and points at B. It means:

- a. A is the parent class of B
- b. B is the parent class of A
- c. A and B are loosely coupled
- d. A and B are tightly coupled

**Solution:** b. B is the parent class of A

A -----> B; wherever the arrow is pointing is the parent class.

13. The output when the code is executed is

```
#include <stdio.h>
enum food{
    buritos=3,
    Pizza=-1,
    Pasta,
    Burger };
int main(){
    enum food a=0;
    switch(a){
        case buritos: printf("Little Italy");
        break;
        case Pizza: printf("Pizza Hut");
        break;
        case Pasta: printf("Pasta Bar Veneto");
        break;
        case Burger: printf("Burker King");
    }
    return 0;
}
```

- a. Compilation error
- b. Burker King
- c. Pasta Bar Veneto
- d. Pizza Hut



**Solution:** c. Pasta Bar Veneto

The output when the code is executed is

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

```
enum food{  
    buritos=3,  
    Pizza=-1,  
    Pasta=0,  
    Burger=1};
```

```
int main(){  
    enum food a=0;  
    switch(a){  
        case buritos: printf("Little Italy");  
        break;  
        case Pizza: printf("Pizza Hut");  
        break;  
        case Pasta: printf("Pasta Bar Veneto");  
        break;  
        case Burger: printf("Burker King");  
    }  
    return 0;  
}
```

14. What is the equivalent while loop for the for loop given below?

```
for(int i =0, j=5; k=10; i<10; i++,j+=5)  
{  
    printf(j);  
}
```

a. i=0;  
j=5;k=10;  
while(i<k)  
{  
j=j+5;  
i=i+1;  
printf(j);  
}

b. i=0;  
j=5;k=10;  
while(i<j+5)  
{  
printf(j);  
j=j+5;  
i=i+1;  
}

c. i=0;  
j=5;k=10;  
while(i<10)  
{  
printf(j);  
j=j+5;  
i=i+1;  
}

d. i=0;  
j=5;k=10;  
while(i<10)  
{  
j=j+5;  
i=i+1;  
printf(j);  
}

**Solution:**

```
c. i=0;  
j=5;k=10;  
while(i<10)  
{  
printf(j);  
j=j+5;  
i=i+1;  
}
```

What is the equivalent while loop for the for loop given below?

```
for(int i=0, j=5, k=10; i<10; i++, j+=5)
{
    printf(j);
}
```

5 10 15 → 50

A) ~~i=0;~~  
~~j=5; k=10;~~  
~~while(i<k)~~  
~~{~~  
~~j=j+5;~~  
~~i=i+1;~~  
~~printf(j);~~  
~~}~~

5 10 15

B) ~~i=0;~~  
~~j=5; k=10;~~  
~~while(i<j+5)~~ → 1 < 10+5 ✓  
~~{~~  
~~printf(j);~~  
~~j=j+5;~~  
~~i=i+1;~~  
~~}~~

5

C) ~~i=0;~~  
~~j=5; k=10;~~  
~~while(i<10)~~  
~~{~~  
~~printf(j);~~  
~~j=j+5;~~  
~~i=i+1;~~  
~~}~~

5 10 →

D) ~~i=0;~~  
~~j=5; k=10;~~  
~~while(i<10)~~  
~~{~~  
~~j=j+5;~~  
~~i=i+1;~~  
~~printf(j);~~  
~~}~~

15. What is the output of the following program?

```
#include<iostream>
using namespace std;
class PM{
public: void designation() {cout << "PM";}
};
class CEO
{
public: CEO()
{ pmPtr = new PM; }
PM *operator -> ()
{ return pmPtr; }
void designation()
{ cout << "CEO";}
```

```

private: PM *pmPtr;
};
int main() {
CEO*ceoPtr;
ceoPtr = new CEO;
ceoPtr ->designation();
delete ceoPtr;
}

```

### Solution:

What is the output of the following program?

```

#include<iostream> ✓
using namespace std; ✓
class PM{
public: void designation() {cout << "PM";}
};
class CEO{
public:
    CEO() {pmPtr = new PM; }
    PM *operator -> () {return pmPtr;}
    void designation() {cout << "CEO";}
    private: PM *pmPtr;
};
int main() {

CEO*ceoPtr;
ceoPtr = new CEO;
ceoPtr ->designation();
delete ceoPtr;
}

```

CEO

16. Consider the following recursive function that returns the LCM of two given number.

```

int Findlcm(int a, int b) { //line 1
int x =1; //line 2
if(x%b == 0 && x %a == 0 ) ?? line 3
return x; //line 4
x++; //line 5
Findlcm(a,b); //line6
return x; //line7
} //line 8

```

P.S. In the actual TCS NQT, this would have been a FUB Question. If there is no error in the above code enter 0 else enter the line number which is wrong.

### Solution:

Consider the following recursive function that returns the LCM of two given number.

```

//line 1
int Findlcm(int a, int b) {
//line 2
    int x = 1;
//line 3
    if(x%b == 0 && x %a == 0) ??
//line 4
    return x;
//line 5
    x++;
//line 6
    Findlcm(a,b);
//line 7
    return x;
//line 8
}

```

Handwritten notes:   
 - "static" written next to line 2.   
 - "2, 3" written above line 3.   
 - "x=2" circled next to line 6.   
 - "2/2" and "2/3" written below line 6.   
 - "x=b" written below line 8.

If there is no error in the above code enter 0 else enter the line number which is wrong.

17. What is the value of maximum, if the following segment runs to completion?

```

#include<limits.h>
int main()
{
    int i=0, maximum = INT_MAX;
    Int numbers[] = {923, 948, 988, 981, 167, 899, 200, 910, 999};
    while(i<sizeof(numbers)/sizeof(numbers[0]))
    {
        if (maximum<numbers[i]) maximum=numbers[i]; i++;
    }
}

```

### Solution:

What is the value of maximum, if the following segment runs to completion?

```

#include<limits.h>
int main()
{
    int i=0, maximum = INT_MAX;
    int numbers[] = {923, 948, 988, 981, 167, 899, 200, 910, 999};
    while(i<sizeof(numbers)/sizeof(numbers[0]))
    {
        if (maximum<numbers[i]) maximum=numbers[i]; i++;
    }
}

```

Handwritten notes:   
 - "2147483647" written twice with a vertical line between them.   
 - "36/4 = 9" written next to the while loop.   
 - "9x4" written next to the if statement.   
 - "0 < 9" written below the while loop condition.

18. What's the output of the following program?

```
#include<stdio.h>
#include<string.h>
int where_are_you(const char *s, char c) {
    int i;
    int l1 = strlen(s);
    for(i=l1-1;i>=0;i--)
        if(s[i]==c) return i;
    return -1;
}
int main() {
    char *s = "No big sentence";
    printf("%d", where_are_you(s,'b'));
}
```

**Solution:**

What's the output of the following program?

```
#include<stdio.h>
#include<string.h>
int where_are_you(const char *s, char c) {
    int i;
    int l1 = strlen(s);
    for(i=l1-1;i>=0;i--)
        if(s[i]==c) return i;
    return -1;
}
int main() {
    char *s = "No big sentence";
    printf("%d", where_are_you(s,'b'));
}
```

*Handwritten annotations: Red arrows point from 'b' in the function signature to the 'b' in the printf statement. Red numbers 15, 14, and 3 are written next to the return values. A red '3' is written below the printf statement.*

19. In the class hierarchy given below, which keyword attached to variables foo, boo and coo will make them inaccessible in class B?

```
class A {
    int foo, boo, coo;
    // Other declarations
};
class B: public A{
    // Declarations
};
```

a. Volatile

b. Strict

c. Static

d. Register

### Solution: c. Static

In the class hierarchy given below, which keyword attached to variables foo, boo and coo will make them inaccessible in class B?

```
class A {  
    int foo, boo, coo;  
    // Other declarations
```

```
};  
class B: public A {  
    // Declarations  
};
```

A) Volatile ✓

B) Strict ✓

C) Static ✓

D) Register ✓

20. Consider the following recursive function which takes a decimal number and returns its binary equivalent

```
long dec2Bin(int decimal) { //line 1  
    long bin, remainder, factor = 1; //line 2  
    if(decimal != 0) { //line 3  
        remainder = decimal % 2; //line 4  
        bin += remainder * factor; //line 5  
        factor *= 10; //line 6  
        dec2Bin(decimal/2); //line 7  
    } //line 8  
    return bin; //line 9  
} //line 10
```

P.S. In the actual TCS NQT, this would have been a FUB Question - where if there is no error in the function enter 0 else enter the line number in error (Give only the numerical value)

### Solution:

Consider the following recursive function which takes a decimal number and returns its binary equivalent

```
long dec2Bin(int decimal) { //line 1  
    long bin, remainder, factor = 1; //line 2  
    if(decimal != 0) { //line 3  
        remainder = decimal % 2; //line 4  
        bin += remainder * factor; //line 5  
        factor *= 10; //line 6  
        dec2Bin(decimal/2); //line 7  
    } //line 8  
    return bin; //line 9  
} //line 10
```

If there is no error in the function enter 0 else enter the line number in error (Give only the numerical value)

Handwritten calculations for decimal 10 and 5:

For 10:  
 $10 \div 2 = 5$   
 $0 = 10 \div 2$   
 $0 = 0 + 0 \times 1$   
 $10 = 1 \times 10$   
 $1 \div 2 = 0$   
 $1$   
Result: 1010

For 5:  
 $5 \div 2 = 2$   
 $1 = 5 \div 2$   
 $0 = 0 + 1 \times 1$   
 $10 = 1 \times 10$   
 $5 \div 2 = 2$   
 $1$   
Result: 101

21. What must be the output of the following program?

```
#include <algorithm> //std::sort
#include <iostream> //std::cout
#include <string> //std::string
#include <vector> //std::vector
using namespace std;
vector<string> intersection(vector<string> &v1, vector<string> &v2)
{ vector<string> v3;
  sort(v1.begin(), v1.end());
  sort(v2.begin(), v2.end());
  set_intersection(v1.begin(), v1.end(), v2.begin(), v2.end(), back_inserter(v3));
  return v3;
}
int main()
{
  vector<string> v1 { "five", "four", "one", "three", "two" };
  vector<string> v2 { "Five", "One", "four", "three", "two" };
  auto v3 = intersection(v1, v2);
  for(string n : v3)
    cout << n << ' ';
}
```

**Solution:** Output: 4 3 2

What must be the output of the following program?

```
#include <algorithm> //std::sort
#include <iostream> //std::cout
#include <string> //std::string
#include <vector> //std::vector
using namespace std;

vector<string> intersection(vector<string> &v1, vector<string> &v2)
{ vector<string> v3;
  sort(v1.begin(), v1.end()); ✓
  sort(v2.begin(), v2.end()); ✓
  set_intersection(v1.begin(), v1.end(), v2.begin(), v2.end(), back_inserter(v3));
  return v3;
}

int main()
{
  vector<string> v1 { "five", "four", "one", "three", "two" };
  vector<string> v2 { "Five", "One", "four", "three", "two" };

  auto v3 = intersection(v1, v2);

  for(string n : v3)
    cout << n << ' ';
}
```



22. Consider the following class definition

```
class Vegetable
{
    String name;
    Vegetable(String n)
    {name = n; }
    void HealthInfo()
    {System.out.println("No info available");
    }
}

class RootVegetable extends Vegetable
{
    RootVegetable(String name)
    {super(name);}
    void HealthInfo()
    {System.out.println("Root vegetables are low in calories and high in antioxidants");}
    double calories()
    {return 25.0;}
    public String toString()
    {return name+":is root"+ super.toString();}
}

class LeafVegetable extends Vegetable
{
    LeafVegetable(String name)
    {super(name);}
    void HealthInfo()
    {System.out.println("Leaf vegetables are low in calories and fat, and high in protein");}
    double calories()
    {return 78.0;}
    public String toString()
    {return name+":is leaf"+ super.toString(); }}
```

**The output of the below code based on the above class definition is**

```
public class MyClass
{
    public static void main(String args[])
    {
        Vegetable v = new Vegetable("Capsicum");
        Vegetable r = new RootVegetable("Carrot");
        LeafVegetable l = new LeafVegetable("Spinach");
        l.HealthInfo();
    }
}
```

**Solution:** Output: Leaf vegetables are low in calories and fat, and high in protein

23. What is the fourth line of output in the following C++ Program?

```
#include<vector>
#include<iterator>
#include<iostream>
#include<algorithm>
using namespace std;
class SubFunction
{
public:
    bool operator()(const string & a, const string & b)
    {return a>b;}
};
int main ()
{
    vector<string> v={"abc","def","ghi","jkl","mno","pqr","stu","vwx","yz"};
    sort(begin(v),end(v),SubFunction());
    copy(begin(v),end(v),ostream_iterator<string>(cout,"\n"));
}
```

**Solution:** Output: pqr

What is the fourth line of output in the following C++ Program?

```
#include<vector>
#include<iterator>
#include<iostream>
#include<algorithm>
using namespace std;
class SubFunction
{
public:
    bool operator()(const string & a, const string & b)
    {return a>b;}
};
int main ()
{
    vector<string>
v={"abc","def","ghi","jkl","mno","pqr","stu","vwx","yz"};
    sort(begin(v),end(v),SubFunction());
    copy(begin(v),end(v),ostream_iterator<string>(cout,"\n"));
}
```

Handwritten annotations on the code above:

- Red checkmarks above the words "pqr", "stu", "vwx", and "yz" in the vector initialization line.
- A red arrow pointing from the "pqr" element to the "copy" function call.
- Handwritten output lines with red checkmarks: "yz ✓", "vwx ✓", "stu ✓", and "pqr ✓".
- A red line under "pqr" with a checkmark below it.

24. Predict the output.

```
import java.util.Scanner;
public class Main{
    public static void main(String args[]) {
        int x = 10;
        switch (x + 1 + 1) {
            case 10:
                System.out.println("Life");
                break;
            case (10+1+1):
                System.out.println("Hard");
                break;
        }
    }
}
```

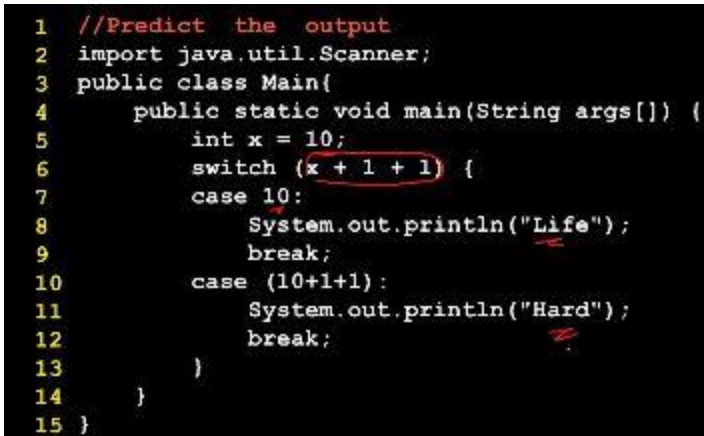
a. Compile time error

b. Hard

c. Life

d. No output

**Solution:** b. Hard



```
1 //Predict the output
2 import java.util.Scanner;
3 public class Main{
4     public static void main(String args[]) {
5         int x = 10;
6         switch (x + 1 + 1) {
7             case 10:
8                 System.out.println("Life");
9                 break;
10            case (10+1+1):
11                System.out.println("Hard");
12                break;
13        }
14    }
15 }
```

25. What is the length of the string displayed by the following program?

```
#include <iostream>
using namespace std;
string do_something(string s)
{
    char char_array[]=" ,,";
    size_t p1=s.find_first_not_of(char_array);
    size_t p2=s.find_first_of(char_array,p1);
    return s.substr(p1,p2-p1-1);
}
```

```
int main()
{
cout<<do_something("No, its wrong");
}
```

### Solution:

What is the length of the string displayed by the following program?

```
#include <iostream>
using namespace std;
string do_something(string s)
{
    char char_array[]="...";
    size_t p1=s.find_first_not_of(char_array);
    size_t p2=s.find_first_of(char_array,p1);
    return s.substr(p1,p2-p1-1);
}
int main()
{
cout<<do_something("No, its wrong");
}
```

*Handwritten annotations:*

- Red arrow pointing to `using namespace std;`
- Red underline under `char_array` in the function definition.
- Red underline under `0` in `size_t p1=s.find_first_not_of(char_array);`
- Red underline under `1` in `size_t p2=s.find_first_of(char_array,p1);`
- Red underline under `0` in `return s.substr(p1,p2-p1-1);`
- Red underline under `0` in `int main()`
- Red underline under `0` in `cout<<do_something("No, its wrong");`
- Red checkmarks and a red 'N' are present.

26. What is the output of the following code?

```
#include<stdio.h>
#include<string.h>
int how_are_you(const char *s, const char *t) {
const char *s1 = s;
while(*s) {
if(strncmp(s,t,strlen(t))==0) return s-s1;
s++;
}
return -1;
}
int main() {
char *s = "How many apples?";
printf("%d", how_are_you(s,"many"));
}
```

### Solution:

```

#include<stdio.h>
#include<string.h>
int how_are_you(const char *s, const char *t) {
    const char *s1 = s;
    while(*s) {
        if(strncmp(s,t,strlen(t))==0) return s-s1;
        s++;
    }
    return -1;
}
int main() {
    char *s = "How many apples?";
    printf("%d", how_are_you(s, "many"));
}

```

$s = s^0$

4

27. Predict the output.

```

import java.util.Scanner;
public class Main {
    public static void main(String args[]) {
        int a=15;
        int b=25;
        if ((a<b) || (a=5)>15)
            System.out.println(a);
        else
            System.out.println(b);
    }
}

```

a. No output

**b. 15**

c. 25

d. 5

**Solution:** b. 15

```

1 //Predict the output
2 import java.util.Scanner;
3 public class Main {
4     public static void main(String args[]) {
5         int a=15;
6         int b=25;
7         if ((a<b) || (a=5)>15)
8             System.out.println(a);
9         else
10            System.out.println(b);
11     }
12 }

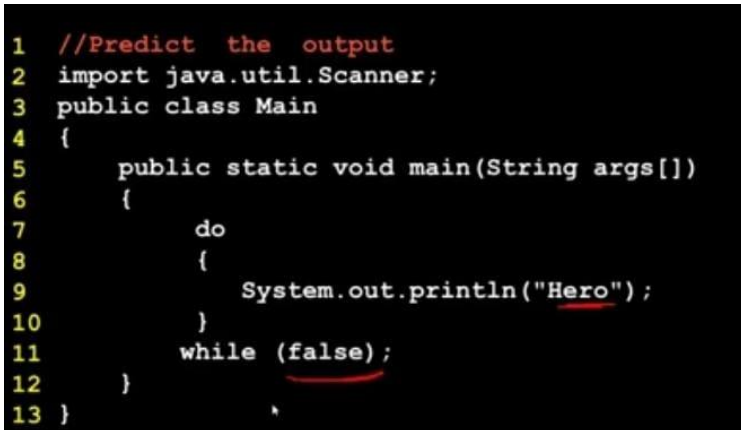
```

28. The output when the code is executed is

```
import java.util.Scanner;
public class Main
{
    public static void main(String args[])
    {
        do
        {
            System.out.println("Hero");
        }
        while (false);
    }
}
```

- a. Run time error      **b. Hero**      c. Hero print Infinite time      d. Compilation error

**Solution:** b. Hero



```
1 //Predict the output
2 import java.util.Scanner;
3 public class Main
4 {
5     public static void main(String args[])
6     {
7         do
8         {
9             System.out.println("Hero");
10        }
11        while (false);
12    }
13 }
```

29. What is the output of the following code?

```
import java.util.Scanner;
public class Main
{
    public static void main(String args[])
    {
        int x = 1, y = 3;
        do
        {
            System.out.println("World");
            while (x < y);
            System.out.println("Sky");
        }
    }
}
```

- a. World      b. Wrold Sky      **c. World Print infinite time**      d. Compilation error

**Solution:** c. World Print infinite time

```
1 //Predict the output
2 import java.util.Scanner;
3 public class Main
4 {
5     public static void main(String args[])
6     {
7         int x = 1, y = 3;
8         do
9             System.out.println("World");
10        while (x < y);
11        System.out.println("Sky");
12    }
13 }
```

30. If the use-input to the following program is “a b c – 99” (without quotes), what’s the output?

```
#include <queue>
#include <string>
#include <iostream>
using namespace std;
int main()
{
    priority_queue<string> q;
    string word, end = “-99”;
    while (cin >> word) { // a b c – 99
        if (word == end) break;
        q.push(word);
    }
    while(q.size()) {
        cout <<q.top();
        q.pop();
    }
}
```

**Solution:**



If the use-input to the following program is "a b c - 99" (without quotes), what's the output?

```
#include <queue>
#include <string>
#include <iostream>
using namespace std;
int main()
{
    priority_queue<string> q;
    string word, end = "-99";
    while (cin >> word) { // a b c - 99 ✓
        if (word == end) break;
        q.push(word);
    }
    while(q.size()) {
        cout << q.top();
        q.pop();
    }
}
```

-99w | c | b | a

abc-99