

CS & IT ENGINEERING

Programming in C

Functions and Storage Classes
DPP 02 Discussion



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TOPICS TO BE COVERED

01 Question

02 Discussion

Q.1



Consider the following program:

[MCQ]

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

```
int main(){
```

```
int a=2, i;
```

```
static int b=a++;
```

```
for(i=0;i<a+b;i++)
```

```
printf("GATE Wallah");
```

```
return 0;
```

```
}
```

Error

A.

GATE Wallah is printed 3 times.

B.

GATE Wallah is printed 4 times.

C.

GATE Wallah is printed 5 times.

☒ D.

Compilation Error.

Which of the following is/are CORRECT?

Q.2

[MCQ]



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

```
void main{
```

```
    extern int a;
```

```
extern int a;
```

```
extern int a;
```

```
    printf("%d", a);
```

```
}
```

```
int a = 15;
```

The output is-

A.

Garbage value

B.

Compilation error

☒ C.

15

D.

No output

Q.3

```
#include<stdio.h>
int func(int a, int b){
    static int p=9, q=21;
    if(a>b){
        a=a-p++;
        b=b+q--;
        return a+b;
    }else{
        return p-q;
    }
}

int main(){
    int i=2, j=-2;
    for(;j<3;j++)
        printf("%d\t", func(i, j));
    return 0;
}
```

$b = b + q;$
 $q = q - 1;$

a
2

p
10 11
9 12
13

b
2

q
20 17
21 18
19

1) j = -2

2) j = -1

3) j = 0

4) j = 1

5) j = 2

$a = a - p++$

(i) $a = a - p$

(ii) $p = p + 1$

$b = b + q$

$q = q - 1$

i 2
j ~~-2 + 1 + 2~~ 3

for(; j < 3 ; j++)

[NAT]

printf("%d\t", func(i, j));

func(2, -2)

func(2, -1)

func(2, 0)

func(2, 1)

func(2, 2)

12 11
10 9
-4

12 + 11
+ 10 + 9
+ (-4)

⇒

38

38

The sum of the values printed is _____.

Q.4

Consider the following program:

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

```
void f(){
```

```
    static int a=3;
```

```
    int b=5;
```

```
    a-=b++;
```

```
    printf("%d\t%d\n",a,b);
```

```
}
```

```
int main()
```

```
{
```

```
    static int a=2;
```

```
    int b=1;
```

```
    f();
```

```
    a+=3;
```

```
    f();
```

```
    printf("%d\t%d",a,b);
```

```
    return 0;
```

```
}
```

The output is-

a

-7
3-2

b

6
5

\Rightarrow

-2	6
-7	6
5	1

A.

-2	6
-7	6
5	1

B.

-2	6
-7	7
5	1

C.

-2	5
-7	6
5	1

D.

None

$a -= b \Rightarrow a = a - b$
 $b = b + 1$ $b = b + 1$

$a = -2 - 5$
 $= -7$

a

5

b

1

A

Q.5

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

```
int i=1;
```

```
int f(){
```

```
    static int i=2;
```

```
    return i++;
```

```
}
```

```
int main()
```

```
{
```

```
    extern int i;
```

```
    char a='B';
```

```
    printf("%d", a+f()+f()+i);
```

```
    return 0;
```

```
}
```

The output is _____

i

1

4
2 3

static

a_{main}

66

66 2 1 1

72

[NAT]



a + f() + f() + i
66 + 2 + 3 + 1

72

Q.6

[MCQ]



Consider the following program:

```
#include <stdio.h>
static int j;
static int j=3;
int f(){
    auto int i=2;
    return i+++--j;
}
int main()
{
    char a='B';
    printf("%d",a+f()+f());
    return 0;
}
```

valid

j
3 2

i
2 3

i+++--j
2 + 1
2 + 2
4

a
66

73

The output is-

A.

68

B.

72

C.

73

D.

Compilation error

Q.7

Consider the following program:

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

```
int f(){
```

```
    static int i=5;
```

```
    return i--;  $\Rightarrow$  return i  
                    then dec.
```

```
int main()
```

```
{
```

```
    for(f();f();printf("GATE Wallah"))
```

```
        printf("Pankaj Sharma");
```

```
    return 0;
```

```
}
```

The number of times printf() is executed is _____.

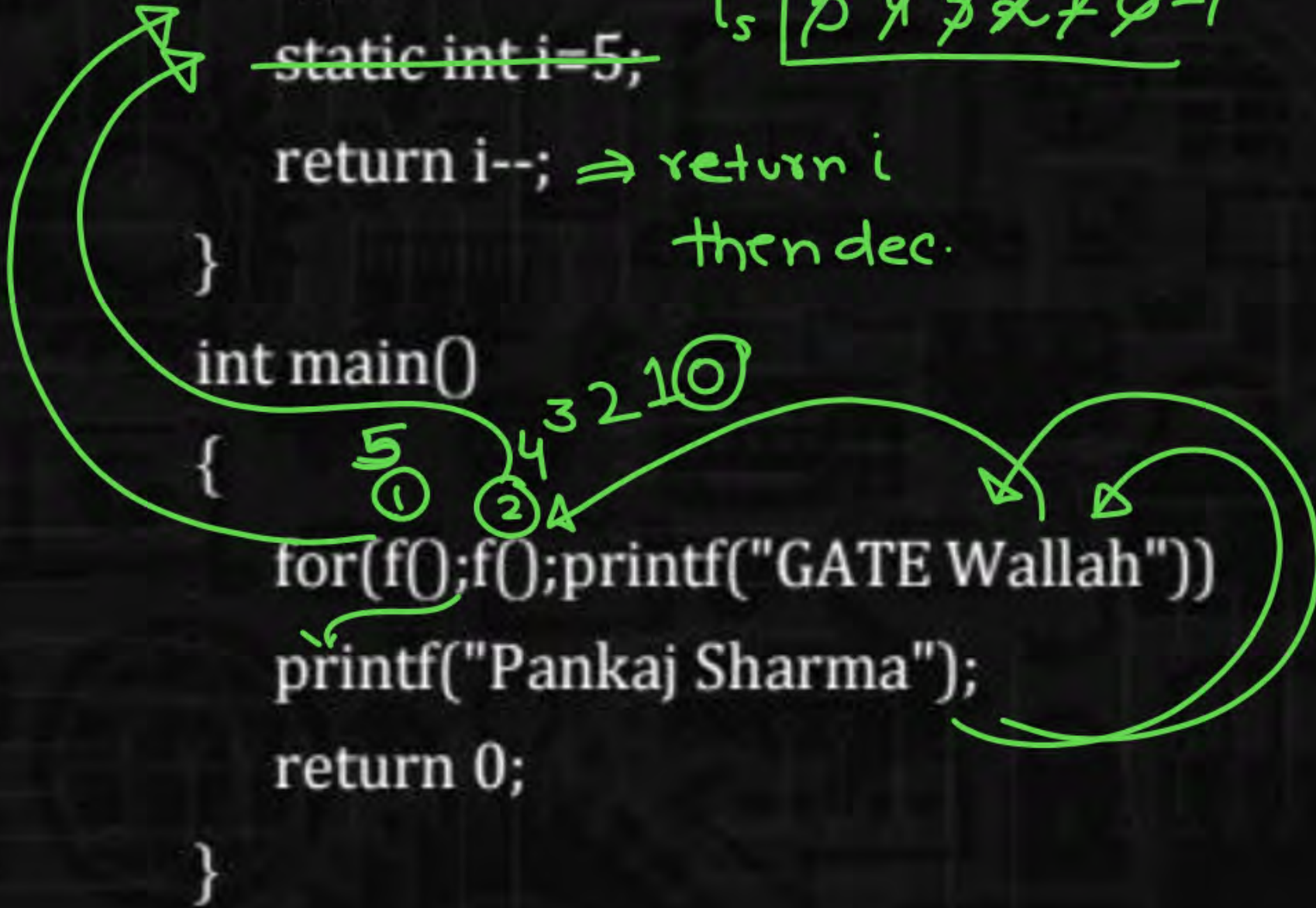
[NAT]



Pf \rightarrow ✓✓✓✓✓✓✓✓

i is 5 4 3 2 1 0 -1

8



Q.8

Which of the following statement(s) is/are CORRECT?

[MSQ]



A.

A static variable has internal linkage.

B.

Static variables are stored in the data segment.

C.

Auto variables are stored in the heap segment.

D.

Register variables behave as auto variables by default.

dynamic
memory
allocation

A, B, D

