GATE

Computer Science & Information Technology

C - Programming

Function & Storage Class

DPP: 4

Q1
```
#include <stdio.h>
void DS( int m){
   int n;
   if (m==0)
      return;
  n = m %10;
  if (n!=0)
  printf("%d", n);
  DS(m/10);
  return;
}
int main(){
   DS(234001);
}
```
The value printed by the above program is _____

Q2
```
#include <stdio.h>
int fun(int x, int y)
{
 if (x == 0)
 return y;
 else
 return fun(x - 1, x + y);
}
int main()
{
 printf("%d", fun(3,10));
 return 0;
}
```
The output of the above program is_____

(A) 12 (B) 15

(C) 16 (D) 17

Q3 Consider the following program
```
#include <stdio.h>
void fun(char * a,int len){
      if(len==0)
         printf("%c",a[len]);
       else {
          printf("%c",a[len]);
          fun(a,len-1);
      }
}
int main(){
 fun("GATE2011", 3) ;
}
```
The output the above program is _____

(A) EGATE (B) GATE

(C) ETAG (D) TAGE

Q4
```
#include <stdio.h>
void foo(int left, int right) {
     if (left <= right) {
         printf("%d",left);
         foo(left + 1, right);
     }
 }
int main(){
   foo(3,8) ;
}
```
The value printed by the program is _____

Q5
```
#include <stdio.h>
void foo(int left, int right) {
      static count;
      if (left <= right) {
         count++;
         printf("%d",left);
         foo(left+count, right-2);
     }
 }
int main(){
 foo(2, 15) ;
}
```

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The value printed by the above program is _____

Q6 Consider the following functionint addReciprocals(int n) {
if (n == 1)
return 1;
else
return 1 / n + addReciprocals(n - 1);
}
The output the program if addReciprocal(5) is called?
(A) 1 (B) 2
(C) 1.617 (D) None of these

Q7 Consider the following program
int result(int n)
{
if (n==1)
return 2;
else
return 2* result(n-1);
}
If n>0, how many time result will be called to evaluate result(n) (including the initial call) ?
(A) 2 (B) 2^n
(C) n (D) 2n

Q8 Consider the following program
#include <stdio.h>
void foo(int left, int right) {
if (left <= right) {
printf("%d",left);
foo(left + 1, right-1);
}
}
int main(){
foo(12,19) ;
}
Number of times prinrf statement executed is_____
(A) 4 (B) 5
(C) 6 (D) 7

Q9
#include <stdio.h>
void fun(char * a,int len){
if(len==0)
printf("%c",a[len]);
else {
printf("%c",a[len]);
fun(a,len-1);
}
}
int main(){
fun("GATE2025", 6) ;
}

what is the output of above program?
(A) 202ETAG (B) ETAG202
(C) 2025TG (D) TG2025

Q10
#include <stdio.h>
void DS(int m){
static int n;
if (m==0)
return;
DS(m/10);
n += m %10;
if (n!=0)
printf("%d", n);
DS(m/10);
return;
}
int main(){
DS(102);
}
The output of the program is_____
(A) 1124112 (B) 1124111
(C) 1124556 (D) 1124576

Q11
#include <stdio.h>
int fun(int x, int y)
{
if (x == 0)
return y;
else
return fun(x - 1, x + y);
}

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```
int main()
{
    printf("%d", fun(fun(2,2), fun(3,4)));
    return 0;
}
```

The output of the program is _____

Q12

```
#include <stdio.h>
int fun1(int n)
{
    if (n == 1)
    return 0;
 else
    return 1 + fun1(n / 2);
}
int main(){
  printf("%d", fun1(1024));
  return 0;
}
```

Q13 Consider the following program

```
#include <stdio.h>
int fun1(int n)
{
  if (n == 1)
  return 0;
else
  return 1 + fun1(n / 2);
}
int main(){
  printf("%d", fun1(fun1(788)));
  return 0;
}
```

What is the output of the program

(A) 5 (B) 6

(C) 3 (D) 4

GATE

Answer Key

Q1	1432
Q2	(C)
Q3	(C)
Q4	345678
Q5	2358
Q6	(A)
Q7	(C)
Q8	(A)
Q9	(A)
Q10	(C)
Q11	25
Q12	10
Q13	(C)

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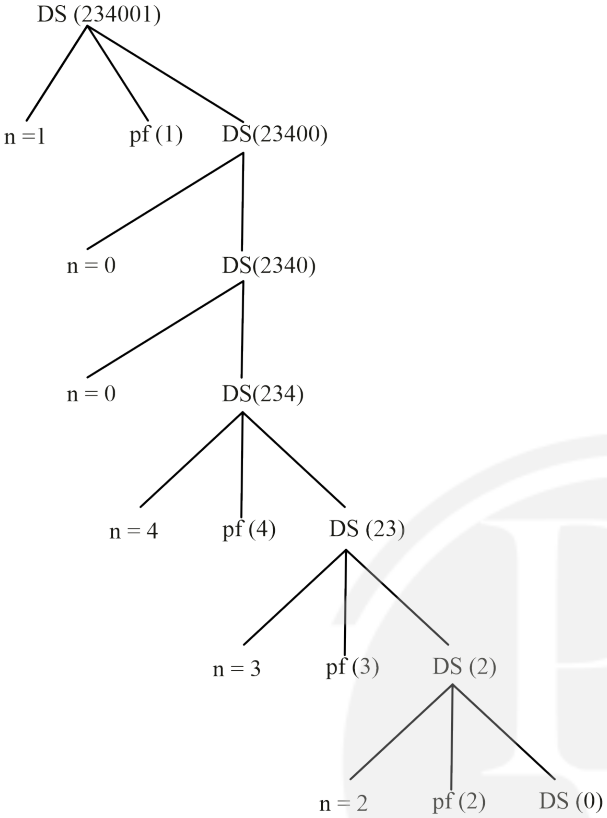
Hints & Solutions

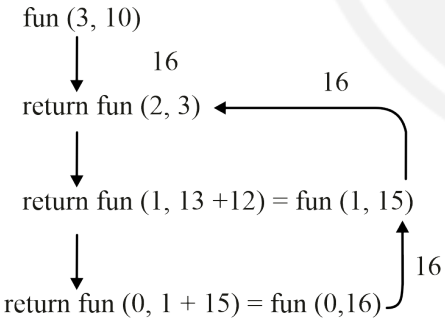
Q1 Text Solution:

Recursion tree



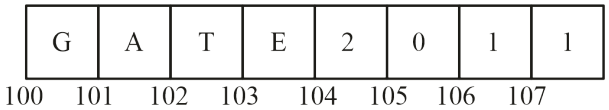
On traversing the tree we get 1432 as a output.

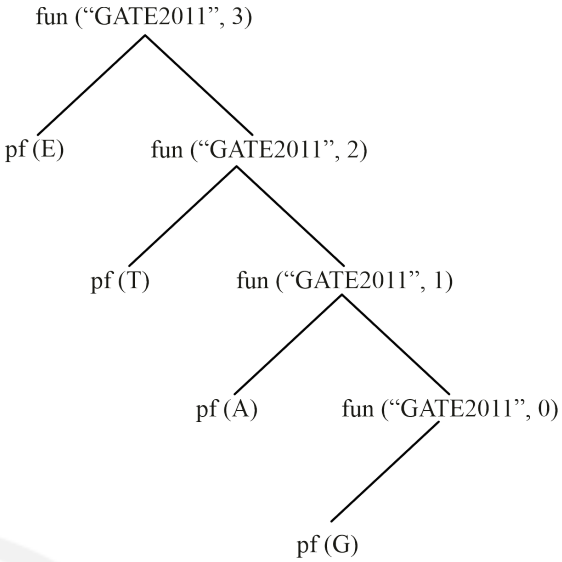
Q2 Text Solution:



∴ Correct option is 'c' which is 16.

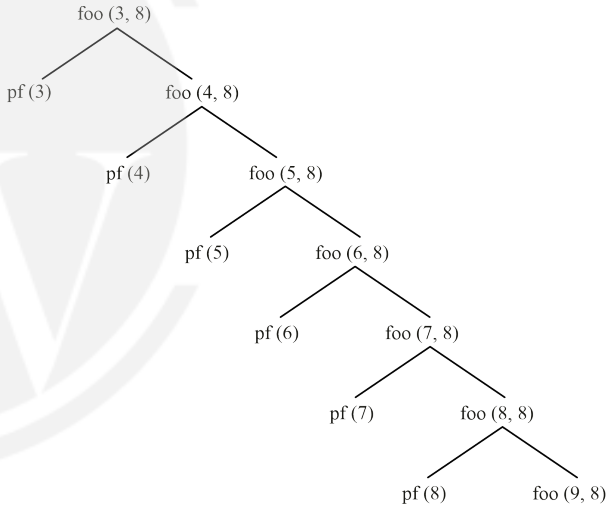
Q3 Text Solution:





On traversing the above tree we set ETAG which is option 'c'

Q4 Text Solution:



on traversing above tree ,We set 345678 as answer.

Q5 Text Solution:

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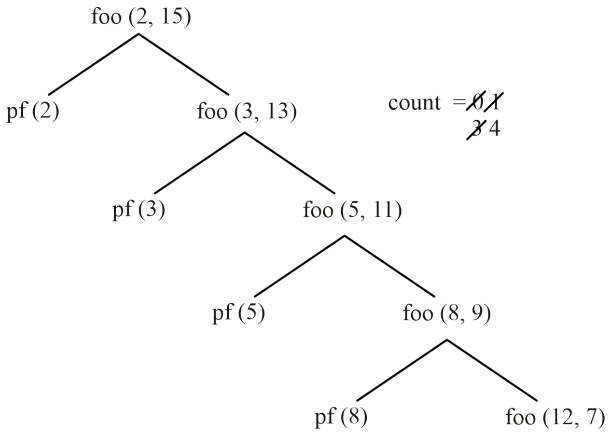
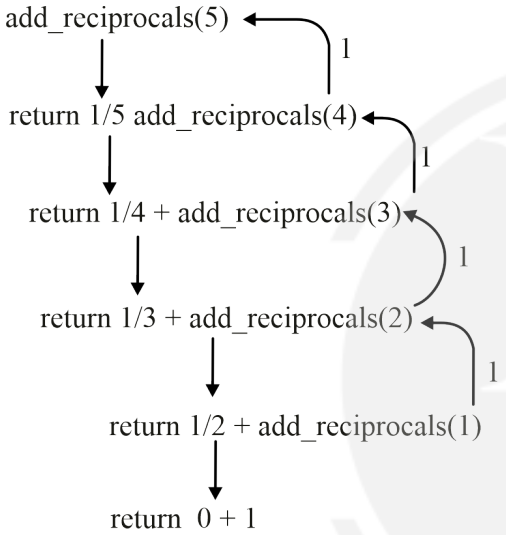


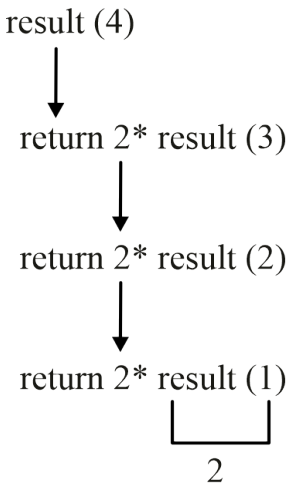
on Traversing above tree we get 2 3 5 8 in the output screen.

Q6 Text Solution:



∴ Hence 'a' is the correct option.

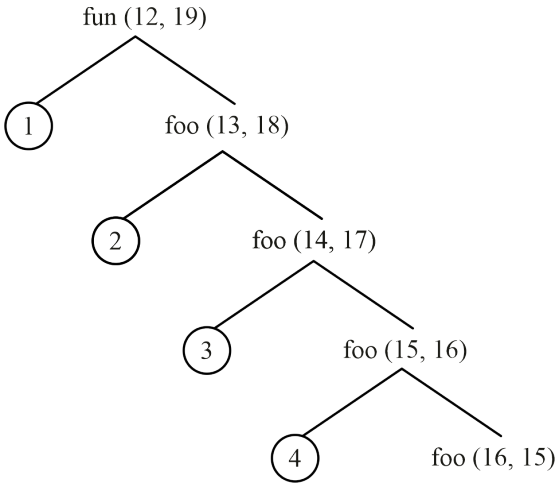
Q7 Text Solution:



for n = 4 – 4 times result is called

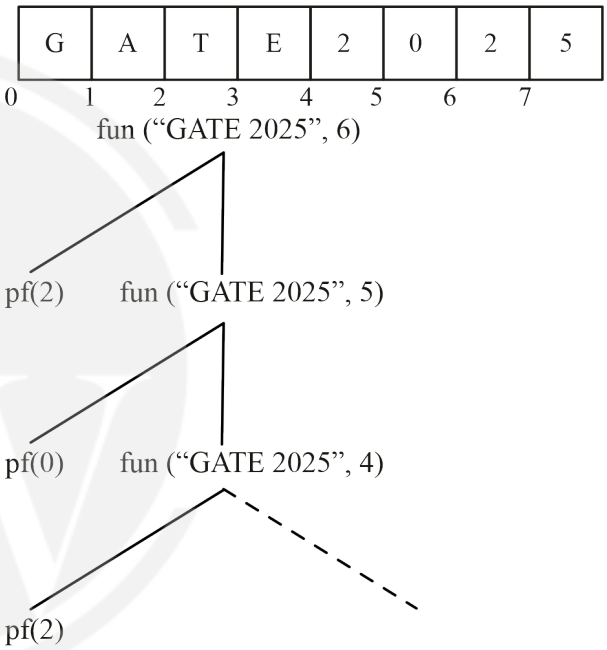
Hence, option 'c' is correct.

Q8 Text Solution:



∴ Option 'A' is correct answer.

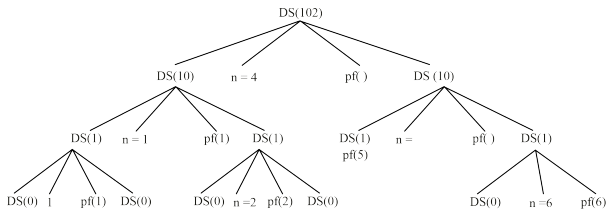
Q9 Text Solution:



Output will be backward printing i.e..... 202ETAG

∴ Option 'A' is correct answer.

Q10 Text Solution:



printed: 1 1 2 4 5 5 6

∴ Option 'c' is correct.

Q11 Text Solution:

Parameter evaluation

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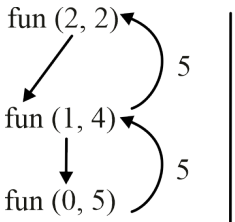
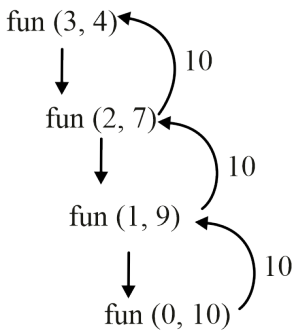
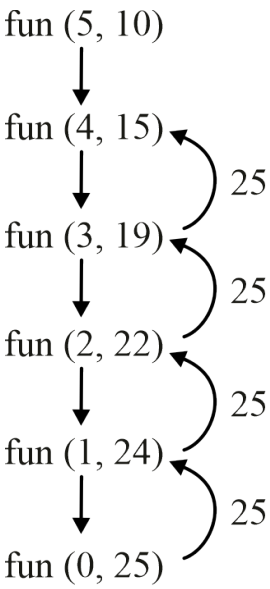
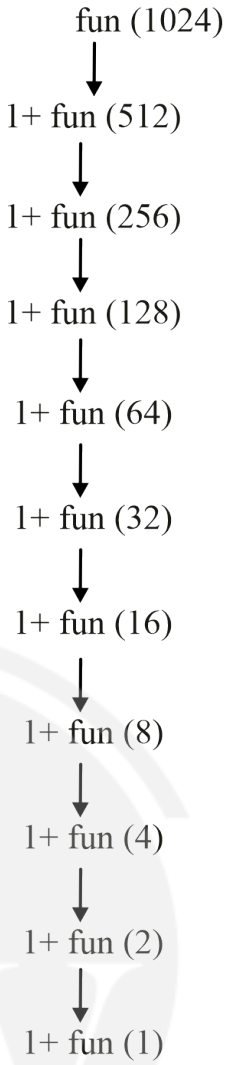






∴ 25 is the correct answer.

Q12 Text Solution:



∴ 10 is the correct answer

or

$\log_2 1024 \Rightarrow 10$

Q13 Text Solution:

fun (788)
↓
1+ fun (394)
↓
1+ fun (197)
↓
1+ fun (98)
↓
1+ fun (49)
↓
1+ fun (24)
↓
1+ fun (12)
↓
1+ fun (6)
↓
1+ fun (3)
↓
1+ fun (1)

fun (9)
↓
1+ fun (4)
↓
1+ fun (2)
↓
1+ fun (1)

∴ 'c' is the correct answer.

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