Week 5 Assignment

The due date for submitting this assignment has passed. Due on 2020-03-04, 23:59 IST. As per our records you have not submitted this assignment.

1) Which of the following is true?  

- The terms "argument" and "parameter" mean the same thing in the context of functions.  
- "Argument" denotes the value passed to a function whereas "parameter" denotes the name by which the value is referred to in the body of the function.  
- "Parameter" denotes the value passed to a function whereas "argument" denotes the name by which the value is referred to in the body of the function.  
- "Argument" and "parameter" are completely unrelated.

No, the answer is incorrect.  
Score: 0  
Accepted Answers:  
"Argument" denotes the value passed to a function whereas "parameter" denotes the name by which the value is referred to in the body of the function.

The "signature" of a function is the first line which gives the return type, the name of the function and the parameters with their types. Thus the signature of the gcd function is

```c++
int gcd(int m, int n)
```

You are given a function whose signature is as follows

```c++
void multiprint(char c, int count)
```
You are told that the function will print count copies of the character c.

The following figure is printed by the code below it

```
*********
*********
*********
***
***
***
```

repeat(3){
    multiprint(blankE,blankF); cout << endl;
}
repeat(3){
    multiprint(blankG,blankH);
    multiprint(blankI,blankJ); cout << endl;
}

2) What is the value of blankE?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: String) ‘’

3) What is the value of blankF?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 9

4) What is the value of blankG?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: String) ‘’

5) What is the value of blankH?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 3

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https://onlinecourses.nptel.ac.in/noc20_cs53/unit?unit=71&assessment=176
6) What is the value of blankI?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: String) ""

7) What is the value of blankJ?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 3

Given below is a partial implementation of multiprint. It is based on the idea that printing something \( n \) times is the same as printing it once and then printing it \( n-1 \) times.

```cpp
void multiprint(char c, count n)
{
if(n == blanka) return;
else{
    cout << c;
    multiprint(blankb, blankc);
}
}
```

Answer the following questions regarding the contents of the blanks. Do not put any spaces in your solutions.

8) What is blanka?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 0

9) What is blankb?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: String) c

10) What is blankc?
Four numbers are printed when the following program executes.

```cpp
int f(int a, int &b, int *c){
a = a*2; b=b+10; (*c)++;
return a+b+*c;
}

main_program{
    int a=1,b=3,c=8;
    cout <<f(b,a,&c)<<' ';
    cout <<a<<' '<<b<<' '<<c<<endl;
}
```

11) What is the first number printed?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 26

12) What is the second number printed?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 11

13) What is the third number printed?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 3

14) What is the fourth number printed?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 9

The function below replaces the argument with its square.
void square(double *x){
    blankK
    return;
}

  x = x*x;
  x = *x * x;
  *x = *x * *x;
  *x = x*x;

No, the answer is incorrect.
Score: 0
Accepted Answers:
* x = *x * x;

As discussed in the lectures, when recursive gcd is called as gcd(205,123), the maximum number of activation frames present at any time is 4.

16) What is the maximum number of activation frames that might be present for the call f(3,5), where f is defined as follows? (Include the activation from the main_program in both cases in the count).

int f(int a, int b){
    if(b == 0) return a;
    else return f(a+1,b-1);
}

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 7

1 point

17) What does the call f(3,5) return?

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Numeric) 8

1 point

18) What will happen as a result of the call f(10,-20)?

-10 will be returned.
10 will be returned.
There will be a compiler error.
The recursion in the program will not terminate.

No, the answer is incorrect.
Score: 0
Accepted Answers:
The recursion in the program will not terminate.

1 point

19) What will the following program do?
void S(int s, int n){
    if(s == n) return;
    forward(s*10);
    right(90);
    S(s+1,n);
}

main_program{

turtleSim();
S(1,15);
getClick();
}

- It will draw a single straight line of length 10+20+...140.
- It will draw a single straight line of length 10+20+...150.
- It will draw a sequence of straight lines of length 10,20,...,140.
- It will draw a sequence of straight lines of length 10,20,...,150.

No, the answer is incorrect.
Score: 0
Accepted Answers:
It will draw a sequence of straight lines of length 10,20,...,140.

Consider the function below

int f(int n){  // Precondition n >= 0, n is even.
    // f(n) should return n
    if(n == 0) return 0;
    else return 2 + f(n-2);
}

We had given a checklist to decide if a recursive function is correct. State whether each of the following criteria in the checklist is true or false.

20) The function has one or more base cases. 1 point
- True
- False

No, the answer is incorrect.
Score: 0
Accepted Answers: True

21) The level 1 recursive calls satisfy the preconditions. 1 point
- True
- False

No, the answer is incorrect.
Score: 0
Accepted Answers: True
22 The problem size, n, reduces in each call but cannot reduce indefinitely.  
   - True
   - False
   No, the answer is incorrect.
   Score: 0
   Accepted Answers: True

23 The correct answer is returned if level 1 calls return the correct answer.  
   - True
   - False
   No, the answer is incorrect.
   Score: 0
   Accepted Answers: True

Consider the problem in the previous question on recursion. However, now we are dropping the precondition "n is even". For recursion, we had given a checklist to decide if a recursive function is correct. State whether each of the following criteria in the checklist is true or false.

24 The function has one or more base cases.  
   - True
   - False
   No, the answer is incorrect.
   Score: 0
   Accepted Answers: False

25 The level 1 recursive calls satisfy the preconditions.  
   - True
   - False
   No, the answer is incorrect.
   Score: 0
   Accepted Answers: False

26 The problem size, n, reduces in each call but cannot reduce indefinitely.  
   - True
   - False
   No, the answer is incorrect.
   Score: 0
   Accepted Answers: False

27 The correct answer is returned if level 1 calls return the correct answer.  
   - True
   - False
   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
True