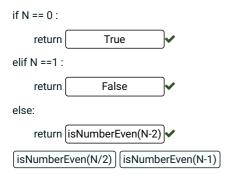
| Started on   | Sunday, 19 March 2023, 12:06 PM           |
|--------------|---|
| State        | Finished                                  |
| Completed on | Sunday, 19 March 2023, 12:16 PM           |
| Time taken   | 10 mins 13 secs                           |
| Marks        | 8.00/8.00                                 |
| Grade        | <b>10.00</b> out of 10.00 ( <b>100</b> %) |

# Question 1 Correct Mark 1.00 out of 1.00

Given below is a function (isNumberEven) that predicts whether a given number is even. The function should return True if a number is even and False otherwise. Fill in the blanks of the return statements:

### isNumberEven(N)



## The thread at freecodechamp explains this in detail

 $\underline{https://forum.freecodecamp.org/t/even-odd-number-check-using-the-recursive-function/310067}\\$ 

| Question 2 Correct   |  |  |  |  |
|--|--|--|--|--|
| Mark 1.00 out of 1.00  |  |  |  |  |
| Consider a situation where you don't have function to calculate power (pow() function in C) and you need to calculate x^n where x can be any number and n is a positive integer. What can be the best possible time complexity of your power function? |  |  |  |  |
| ( a.   | O(nLogn)   |  |  |  |
| O b.   | O(n)   |  |  |  |
| O c.   | O(LogLogn)   |  |  |  |
| <ul><li>d.</li></ul>   | O(Logn) ✓  |  |  |  |
| Refer <u>h</u>   | of a number can be calculated recursively.  https://www.geeksforgeeks.org/write-a-c-program-to-calculate-powxn/  rect answer is: O(Logn)   |  |  |  |
| Refer <u>h</u><br>The co   | ttps://www.geeksforgeeks.org/write-a-c-program-to-calculate-powxn/crect answer is: O(Logn)   |  |  |  |
| Refer <u>h</u>   | ttps://www.geeksforgeeks.org/write-a-c-program-to-calculate-powxn/crect answer is: O(Logn)   |  |  |  |
| Refer h The col  | ttps://www.geeksforgeeks.org/write-a-c-program-to-calculate-powxn/crect answer is: O(Logn)   |  |  |  |
| Refer h The cor Question 3 Correct Mark 1.00 o   | ttps://www.geeksforgeeks.org/write-a-c-program-to-calculate-powxn/ rrect answer is: O(Logn)  but of 1.00  rsion, the condition for which the function will stop calling itself             |  |  |  |
| Refer h The con Question 3 Correct Mark 1.00 o   | ttps://www.geeksforgeeks.org/write-a-c-program-to-calculate-powxn/ rrect answer is: O(Logn)  but of 1.00  rsion, the condition for which the function will stop calling itself             |  |  |  |
| Refer h The con Question 3 Correct Mark 1.00 c  In recur is a. b.  | ttps://www.geeksforgeeks.org/write-a-c-program-to-calculate-powxn/ rrect answer is: O(Logn)  but of 1.00  rsion, the condition for which the function will stop calling itself  Worst case |  |  |  |

The correct answer is: Base case

```
Question 4
Correct
Mark 1.00 out of 1.00
```

```
Output of the following program is?
void function( int n)
  if(n==0)
    return;
  printf("%d ",n*2);
  unction(n-1);
}
int main()
{
  function(100);
  return 0;
}
 a. 100, 99, 98, 97, .... 0
 o b. 200, 199, 198, 197, .... 1
 © c. 200, 198, 196, 194, .... 2 	
 d. 100
```

The correct answer is: 200, 198, 196, 194, .... 2

| Question 5              |  |  |
|-------------------------|--|--|
| Correct                 |  |  |
| Mark 1.00 out of 1.00   |  |  |
|                         |  |  |
| Consider Following Code |  |  |

```
Consider Following Code

void my_recursive_function()
{
    my_recursive_function();
}

int main()
{
    my_recursive_function();
    return 0;
}

What will happen when the above snippet is executed?

a. The code will be executed successfully and random output will be generated

b. The code will run for some time and stop when the stack overflows ✓
```

The correct answer is: The code will run for some time and stop when the stack overflows

oc. The code will be executed successfully and no output will be generated

# Question 6 Correct Mark 1.00 out of 1.00

Algorithm(s) which use divide and conquer approach

od. The code will show a compile time error

| a.   | Insertion Sort  |
|------|-----------------|
| _ b. | Selection Sort  |
|      | Merge sort ✔    |
| d.   | Binary search 🗸 |

The correct answers are: Binary search, Merge sort

| Question 7            |  |
|-----------------------|--|
| Correct               |  |
| Mark 1.00 out of 1.00 |  |

Consider the following functions,

## 

What are the above types of recursive functions called?

#### Select one:

- a. Tail Recursion
- b. Linear Recursion
- o. Nested Recursion
- od. Multiple Recursion
- e. Mutual Recursion

Your answer is correct.

"Mutual recursion is a form of recursion where two mathematical or computational objects, such as functions or data types, are defined in terms of each other" - GeeksforGeeks.

Here the function func1 calls func2 and vice versa, making both functions dependent on each other.

The correct answer is:

**Mutual Recursion** 

## Question 8 Correct Mark 1.00 out of 1.00

In a little game, a computer is going to randomly select an integer from 1 to 2000. You'll keep guessing numbers until you find the computer's number, and the computer will tell you each time if your guess was too high or too low. How many quesses you need atmost in your worst case scenario given you use an optimal strategy?



The correct answer is: 11