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Quiz 3

Started on	Sunday, 19 March 2023, 10:22 AM
State	Finished
Completed on	Sunday, 19 March 2023, 10:52 AM
Time taken	30 mins
Marks	8.00/8.00
Grade	**10.00** out of 10.00 (**100%**)

Question 1
Correct
Mark 1.00 out of 1.00

There are N number of people attending to a meeting. At the end of the meeting there is a coffee break where everyone can get to know each other. If each person shakes hands with every other attendants how can we calculate total number of handshakes in a recursive manner?

Select the correct recursive function.

- ● a. f(n)=f(n-1) + (n-1)   ✔
- ○ b. f(n)=f(n-1)*(n-1)

- ○ c. f(n)=f(n-2) + (n-2)

- ○ d. f(n)=n*(n-1)/2

The correct answer is: f(n)=f(n-1) + (n-1)

Question **2**

Correct

Mark 1.00 out of 1.00

Algorithm(s) which use divide and conquer approach

☑ a.   Selection Sort   ✖

☑ b.   Insertion Sort   ✖

☑ c.   Merge sort   ✔

☑ d.   Binary search   ✔

The correct answers are: Binary search, Merge sort

Question **3**

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. $O(Logn)$ ✔

◯ b. $O(LogLogn)$

◯ c. $O(nLogn)$

◯ d. $O(n)$

Power of a number can be calculated recursively.

Refer https://www.geeksforgeeks.org/write-a-c-program-to-calculate-powxn/

The correct answer is: $O(Logn)$

Question **4**

Correct

Mark 1.00 out of 1.00

The definition of recursive function

- ⊙ a. Function that calls itself directly or indirectly to solve a smaller version of its task ✔
- ○ b. Function that calls function directly or indirectly to solve a different version of its task
- ○ c. Function that calls itself directly or indirectly to solve a different version of its task
- ○ d. Function that calls function directly or indirectly to solve a smaller version of its task

The correct answer is: Function that calls itself directly or indirectly to solve a smaller version of its task

Question **5**

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
- ⊙ b. 200, 198, 196, 194, ... 2 ✔
- ○ c. 200, 199, 198, 197, ... 1
- ○ d. 100, 99, 98, 97, ... 0

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

Question **6**

Correct

Mark 1.00 out of 1.00

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 no output will be generated
- ◉ b. The code will run for some time and stop when the stack overflows   ✔
- ○ c. The code will be executed successfully and random output will be generated
- ○ d. The code will show a compile time error

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

Question **7**

Correct

Mark 1.00 out of 1.00

In a little game, a computer is going to randomly select an integer from 1 to 1000. 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?

Answer: | 10 | ✔

The correct answer is: 10

Question **8**

Correct

Mark 1.00 out of 1.00

Consider the following functions,

func1(N)

```
if N == 0:

        return True

else:

        return func2(N-1)


func2(N)

if N == 0:

        return False

else:

        return func1(N-1)
```

What are the above types of recursive functions called ?

Select one:

- ○ a. Multiple Recursion
- ● b. Mutual Recursion   ✔
- ○ c. Tail Recursion
- ○ d. Nested Recursion
- ○ e. Linear 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

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