Prep 10 Quiz Results for Frederick Meneses

Correct answers are hidden.

Score for this attempt: **6** out of 6

Submitted Mar 24 at 1pm

This attempt took less than 1 minute.

Question 1

1 / 1 pts

Match each function $g(n)$ on the left with a function $f(n)$ on the right such that g is $\Theta(f)$. Use each function $f(n)$ exactly once!

(Due to limitations in Quercus, we are using standard LaTeX notation to represent subscripts and superscripts: “n^2” stands for n^2 and “log_3 n” stands for $\log_3 n$, for example.)

(n + 3) / n^2	1/n
log_3 (n) + 5	log_2 n
(1/n^2) + 5	1
n^2 – 10n + 300	n^2

(n + 1) (n + 4) / (n + 2)	n
5n + 2^n	2^n

Question 2

1 / 1 pts

When analyzing the running time of an algorithm we count the number of "basic operations" performed by that algorithm. How do we define a *basic operation*?

- One expression in a program (there can be many expressions in a single line of code).
- An arithmetic calculation.
- One line of code.
- Any block of code whose running time does not depend on the size of the algorithm's input.

Question 3

1 / 1 pts

Select every block of code below that constitutes a “basic operation,” according to our definition. Assume that each block appears as part of a function with a list parameter named `lst` and that an integer variable `i` has already been defined.

- [x]
```
if i % 2 == 0:
    i = i + 1
else:
    i = i * 2
```

- [x]
```
print(lst[i])
```

- [x]
```
for i in range(10):
    print(lst[i])
```

- [ ]
```
while i < len(lst):
    print(lst[i])
    i = i + 1
```

Question 4

1 / 1 pts

Consider the following Python function.

```
def print_items(lst: list) -> None:
  for item in lst:
    print(item)
```

Let *n* represent the length of the input list. How many **loop iterations** occur when we call this function?

- (●) *n*
- ( ) n^2
- ( ) 0
- ( ) 1

Question 5

1 / 1 pts

Consider the following Python function.

```
def print_items2(lst: list) -> None:
  i = 0
  while i < len(lst):
    print(lst[i])
    i += 2             # Increase i by 2
```

Let *n* represent the length of the input list. How many loop iterations occur when we call this function? (We're looking for the exact expression here, so please be careful with off-by-one errors.)

- ( ) $\lfloor \frac{n}{2} \rfloor + 1$

- ◉ $\lceil \frac{n}{2} \rceil$
- ○ $\frac{n}{2}$
- ○ $\lfloor \frac{n}{2} \rfloor$

Question 6

1 / 1 pts

Consider the following Python function.

```
def print_items3(lst: List[int]) -> None:
    for item in list:
        i = 0
        while i < len(lst):
            print(item + lst[i])
            i = i + 2
```

Let *n* represent the length of the input list. How many loop iterations of the *inner loop* occur when we call this function? Count **all** iterations of the inner loop, across all iterations of the outer loop.

- ◉ $n \cdot \lceil \frac{n}{2} \rceil$
- ○ $n + \lfloor \frac{n}{2} \rfloor$
- ○ $\lfloor \frac{n^2}{2} \rfloor$

- $\frac{3}{2}n$

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