Unit 3 - Week 1 Quiz

Week 1 Quiz

The due date for submitting this assignment has passed.

Due on 2019-08-14, 23:59 IST.

Assignment submitted on 2019-07-29, 18:24 IST

All questions carry equal weightage. All Python code is assumed to be executed using Python3. You may submit as many times as you like within the deadline. Your final submission will be graded.

1) What does `h(3231)` return for the following function definition?

```
def h(x):
    (m,a) = (1,0)
    while m <= x:
        (m,a) = (m*2,a+1)
    return(a)
```

12

Yes, the answer is correct.
Score: 2.5

Accepted Answers:

*(Type: Regex Match) [ ]*12[ ]*

2.5 points

2) What is `g(24) - g(23)`, given the definition of g below?

```
def g(n):
    s=0
    for i in range(1,n+1):
        if n%i == 0:
           s = s+1
    return(s)
```

6

Yes, the answer is correct.
Score: 2.5

Accepted Answers:
*(Type: Regex Match) [ ]*6[ ]*

2.5 points

3) Consider the following function `f`. ***2.5 points***

```
def f(n):
    s=0
    for i in range(1,n+1):
        if n%i == 0:
           s = s+1
    return(s%2 == 1)
```

The function `f(n)` given above returns `True` for a positive number `n` if and only if:

- `n` is an odd number.
- `n` is a prime number.
- `n` is a composite number.
- `n` is a perfect square.

No, the answer is incorrect.
Score: 0

Feedback:
`f(n)` computes whether the number of factors of `n` is odd. Factors occur in pairs, except for perfect squares. So the number of factors is odd only for perfect squares.

Accepted Answers:
n is a perfect square.

4) Consider the following function `f`. ***2.5 points***

```
def f(m):
    if m == 0:
      return(0)
    else:
      return(m+f(m-1))
```

Which of the following is correct?

- ( ) The function always terminates with f(n) = factorial of n
- ( ) The function always terminates with f(n) = n(n+1)/2
- ( ) The function terminates for nonnegative n with f(n) = factorial of n
- (•) The function terminates for nonnegative n with f(n) = n(n+1)/2

Yes, the answer is correct.
Score: 2.5

Feedback:
If `m` is negative, the function does not terminate. Otherwise, it computes 1+2+..+`m` = `m(m+1)/2`.

Accepted Answers:
The function terminates for nonnegative n with f(n) = n(n+1)/2