



Unit 3 - Week 1 Quiz

Course outline

How to access the portal

Week 1: Introduction

Week 1 Quiz

● Quiz : Week 1 Quiz

Week 2: Basics of Python

Week 2 Quiz

Week 2 Programming Assignment

Week 3: Lists, inductive function definitions, sorting

Week 3 Programming Assignment

Week 4: Sorting, Tuples, Dictionaries, Passing Functions, List Comprehension

Week 4 Quiz

Week 4 Programming Assignment

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Week 1 Quiz

The due date for submitting this assignment has passed. **Due on 2018-08-23, 23:59 IST.**

Submitted assignment (Submitted on 2018-08-09, 16:12)

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 `g(31415927)` return, for the following function definition?

```
def g(x):
    (q,d) = (1,0)
    while q <= x:
        (q,d) = (q*10,d+1)
    return(d)
```

8

Yes, the answer is correct.

Score: 1

Accepted Answers:

(Type: Numeric) 8

1 point

2) What is the value of `h(231,8)` for the function below?

```
def h(m,n):
    ans = 0
    while (m >= n):
        (ans,m) = (ans+1,m-n)
    return(ans)
```

28

Yes, the answer is correct.

Score: 1

Accepted Answers:

(Type: Numeric) 28

1 point

3) Consider the following function `h`.

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

1 point

```
f = f + 1
return(f%2 == 1)
```

The function $h(n)$ given above returns True for a positive number n whenever:

- ☐ n is a multiple of 2
- ☐ n is a composite number
- ☐ n is a prime number
- ☒ n is a perfect square

Yes, the answer is correct.

Score: 1

Feedback:

*f is the number of factors of n between 1 and n . Factors of n occur in pairs (x,y) so that $x*y = n$. If n is a perfect square, one factor will be its own pair, so the number of factors is odd and f returns True. If n is no perfect square, the number of factors is even and f returns False.*

Accepted Answers:

n is a perfect square

4) Consider the following function f .

1 point

```
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 $f(n) = n(n+1)/2$
- ☐ The function always terminates with $f(n) = \text{factorial of } n$
- ☒ The function terminates for non-negative n with $f(n) = n(n+1)/2$
- ☐ The function terminates for non-negative n with $f(n) = \text{factorial of } n$

Yes, the answer is correct.

Score: 1

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 non-negative n with $f(n) = n(n+1)/2$

End