

Programming, Data Structures And Algorithms Using Python - Week 1

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Contents covered in Week 1 lectures:

- Introduction
- Naive GCD algorithm
- Improving naive algorithm
- Euclid's algorithm
- Downloading and installing Python

Example 1

```
def example1(num):
```

```
    if num == 1:
```

```
        return num
```

```
    else:
```

```
        return num * example1(num - 1)
```

```
example1(5)
```

Example 2

```
def example2(str):  
    for i in "?',!;":  
        str= str.replace(i, "")  
        words = str.split(" ")  
        avgLength = round(sum(len(word) for word in words)/len(words),2)  
    return avgLength  
  
example2("Hello this is the first example statement.")  
example2("I am studying algorithm example in python")
```

Example 3

```
def example3(str):  
    frequency = {}  
  
    for i in str:  
        if i not in frequency:  
            frequency[i] = 1  
        else:  
            frequency[i] +=1  
  
    for i in range(len(str)):  
        if frequency[str[i]] == 1:  
            return i  
  
    return -1  
  
example3("elephant")
```

Example 4

```
def example4(n):  
    prime_numbers = []  
    for num in range(n):  
        if num > 1:  
            for i in range(2, num):  
                if (num % i) == 0:  
                    break  
            else:  
                prime_numbers.append(num)  
    return prime_numbers  
  
example4(30)
```

Program 5

```
def example5(inp):  
    for i in range(len(inp)):  
        for j in range(0, len(inp) - i - 1):  
            if inp[j] > inp[j + 1]:  
                inp[j], inp[j + 1] = inp[j + 1], inp[j]  
  
ilist = [6, 5, 8, 9, 7]  
  
example5(ilist)
```