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)
```