

# Rajalakshmi Engineering College

Name: Saii Anish R  
Email: 241501175@rajalakshmi.edu.in  
Roll no: 241501175  
Phone: 8438920387  
Branch: REC  
Department: I AI & ML FB  
Batch: 2028  
Degree: B.E - AI & ML

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## NeoColab\_REC\_CS23221\_Python Programming

### REC\_Python\_Week 2\_CY

Attempt : 1  
Total Mark : 40  
Marks Obtained : 40

### Section 1 : Coding

#### 1. Problem Statement

Gabriel is working on a wildlife research project where he needs to compute various metrics for different animals based on their characteristics. Each animal type requires a different calculation: a deer's distance traveled, a bear's weight based on footprint size, or a bird's altitude based on its flying pattern.

Conditions:

For Deer (Mode 'D' or 'd'): Distance = speed of sound \* time taken, where the speed of sound in air is 343 meters per second. For Bear (Mode 'B' or 'b'): Weight = footprint size \* average weight, where the average weight per square inch for a bear is 5.0 pounds. For Bird (Mode 'F' or 'f'): Altitude = flying pattern \* distance covered (in meters).

Write a program to help Gabriel analyze the characteristics of animals

based on the given inputs.

### ***Input Format***

The first line of input consists of a character, representing the type of animal 'D/d' for deer, 'B/b' for bear, and 'F/f' for bird.

If the choice is 'D' or 'd':

The second line of input consists of a floating-point value T, representing the time taken from the deer's location to the observer.

If the choice is 'B' or 'b':

The second line of input consists of a floating-point value S, representing the size of the bear's footprint in square inches.

If the choice is 'F' or 'f':

1. The second line of input consists of a floating-point value P, representing the bird's flying pattern.
2. The third line consists of a floating-point value D, representing the distance covered by the bird in meters.

### ***Output Format***

The output prints one of the following:

If the choice is 'D' or 'd':

The output prints "Distance: X m" where X is a floating point value rounded off to two decimal places, representing the calculated distance traveled by the sound wave in meters.

If the choice is 'B' or 'b':

The output prints "Weight: Y lb" where Y is a floating point value rounded off to two decimal places, representing the estimated weight of the bear in pounds.

If the choice is 'F' or 'f':

The output prints "Altitude: Z m" where Z is a floating point value rounded off to two decimal places, representing the calculated altitude of the bird's flight in meters.

If the given choice is invalid, print "Invalid".

Refer to the sample output for formatting specifications.

### **Sample Test Case**

Input: d

2.5

Output: Distance: 857.50 m

### **Answer**

# You are using Python

```
def analyze_animal(animal_type, *args):
    if animal_type.lower() == 'd':
        time_taken = args[0]
        distance = 343 * time_taken
        return f"Distance: {distance:.2f} m"
    elif animal_type.lower() == 'b':
        footprint_size = args[0]
        weight = footprint_size * 5.0
        return f"Weight: {weight:.2f} lb"
    elif animal_type.lower() == 'f':
        flying_pattern = args[0]
        distance_covered = args[1]
        altitude = flying_pattern * distance_covered
        return f"Altitude: {altitude:.2f} m"
    else:
        return "Invalid"
```

```
animal_type = input()
if animal_type.lower() == 'd':
    time_taken = float(input())
    result = analyze_animal(animal_type, time_taken)
    print(result)
elif animal_type.lower() == 'b':
    footprint_size = float(input())
    result = analyze_animal(animal_type, footprint_size)
    print(result)
elif animal_type.lower() == 'f':
```

```
flying_pattern = float(input())
distance_covered = float(input())
result = analyze_animal(animal_type, flying_pattern, distance_covered)
print(result)
else:
    print(analyze_animal(animal_type))
```

**Status :** Correct

**Marks :** 10/10

## 2. Problem Statement

Max is fascinated by prime numbers and the Fibonacci sequence. He wants to combine these two interests by creating a program that outputs the first n prime numbers within the Fibonacci sequence.

Your task is to help Max by writing a program that prints the first n prime numbers in the Fibonacci sequence using a while loop along with the break statement to achieve the desired functionality.

### ***Input Format***

The input consists of an integer n, representing the number of prime Fibonacci numbers to generate.

### ***Output Format***

The output displays space-separated first n prime numbers found in the Fibonacci sequence.

Refer to the sample output for the formatting specifications.

### ***Sample Test Case***

Input: 5

Output: 2 3 5 13 89

### ***Answer***

```
def is_prime(num):
    if num <= 1:
```

```

        return False
    for i in range(2, int(num**0.5) + 1):
        if num % i == 0:
            return False
    return True

def fibonacci(n):
    fib_prime = []
    a, b = 0, 1
    while True:
        fib = a + b
        a, b = b, fib
        if is_prime(fib):
            fib_prime.append(fib)
            if len(fib_prime) == n:
                break
    return fib_prime

n = int(input())
result = fibonacci(n)
print(*result)

```

**Status :** Correct

**Marks :** 10/10

### 3. Problem Statement

Nisha is a mathematics enthusiast, eager to explore the realm of twin prime numbers. The objective is to develop a program that enables the discovery and presentation of twin prime pairs.

The program should take an integer 'n' as input and generate 'n' pairs of twin primes, displaying the pairs with a difference of 2 between them.

#### **Input Format**

The input consists of a single integer, n.

#### **Output Format**

The output displays the 'n' pairs of twin primes, the pairs with a difference of 2 between them.

Refer to the sample output for the formatting specifications.

### **Sample Test Case**

Input: 5

Output: 3 5

5 7

11 13

17 19

29 31

### **Answer**

# You are using Python

```
def is_prime(n):
    if n <= 1:
        return False
    for i in range(2,int(n**0.5)+1):
        if(n % i == 0):
            return False
    return True

def twin_prime(count):
    pairs = []
    num = 3
    while len(pairs) < count:
        if is_prime(num) and is_prime(num + 2):
            pairs.append((num,num+2))
            num += 2
    return pairs

num_pairs = int(input())
result = twin_prime(num_pairs)
for pair in result:
    print(pair[0],pair[1])
```

**Status :** Correct

**Marks :** 10/10

## **4. Problem Statement**

Students are allowed to work on our computer center machines only after entering the correct secret code. If the code is correct, the message "Logged In" is displayed. They are not allowed to log in to the machine until they enter the correct secret code.

Write a program to allow the student to work only if he/she enters the correct secret code.

Note: Here, secret code means the last three digits should be divisible by the first digit of the number.

### ***Input Format***

The input consists of an integer n, which represents the secret code.

### ***Output Format***

The output displays either "Logged In" or "Incorrect code" based on the given condition.

Refer to the sample output for the formatting specifications.

### ***Sample Test Case***

Input: 2345

Output: Incorrect code

### ***Answer***

```
# You are using Python
n = int(input())
first = int(str(n)[0])
last3 = n % 1000
if first != 0 and last3 % first == 0:
    print("Logged In")
else:
    print("Incorrect code")
```

**Status :** Correct

**Marks :** 10/10