Question 1:

Please write a program using generator to print the numbers which can be divisible by 5 and 7 between 0 and n in comma separated form while n is input by console.

Example:  
If the following n is given as input to the program:

100

Then, the output of the program should be:

0,35,70

Question 2:

Please write a program using generator to print the even numbers between 0 and n in comma separated form while n is input by console.

Example:  
If the following n is given as input to the program:

10

Then, the output of the program should be:

0,2,4,6,8,10

Question 3:

The Fibonacci Sequence is computed based on the following formula:

f(n)=0 if n=0  
f(n)=1 if n=1  
f(n)=f(n-1)+f(n-2) if n>1

Please write a program using list comprehension to print the Fibonacci Sequence in comma separated form with a given n input by console.

Example:  
If the following n is given as input to the program:

7

Then, the output of the program should be:

0,1,1,2,3,5,8,13

Question 4:

Assuming that we have some email addresses in the "[username@companyname.com](mailto:username@companyname.com)" format, please write program to print the user name of a given email address. Both user names and company names are composed of letters only.

Example:  
If the following email address is given as input to the program:

[john@google.com](mailto:john@google.com)

Then, the output of the program should be:

john

Question 5:

Define a class named Shape and its subclass Square. The Square class has an init function which takes a length as argument. Both classes have a area function which can print the area of the shape where Shape's area is 0 by default.

Ans: Question 1: Generator to print numbers divisible by 5 and 7

```python

def divisible\_by\_5\_and\_7(n):

for i in range(n+1):

if i % 5 == 0 and i % 7 == 0:

yield str(i)

n = int(input("Enter a number: "))

result = ','.join(divisible\_by\_5\_and\_7(n))

print(result)

```

Question 2: Generator to print even numbers

```python

def even\_numbers(n):

for i in range(n+1):

if i % 2 == 0:

yield str(i)

n = int(input("Enter a number: "))

result = ','.join(even\_numbers(n))

print(result)

```

Question 3: List comprehension for Fibonacci Sequence

```python

n = int(input("Enter a number: "))

fibonacci\_sequence = [0, 1]

if n <= 1:

result = fibonacci\_sequence[:n+1]

else:

while len(fibonacci\_sequence) < n + 1:

fibonacci\_sequence.append(fibonacci\_sequence[-1] + fibonacci\_sequence[-2])

result = fibonacci\_sequence

result = ','.join(map(str, result))

print(result)

```

Question 4: Extracting username from email address

```python

email = input("Enter an email address: ")

username = email.split('@')[0]

print(username)

```

Question 5: Shape and Square classes

```python

class Shape:

def \_\_init\_\_(self):

self.area = 0

def calculate\_area(self):

pass

class Square(Shape):

def \_\_init\_\_(self, length):

super().\_\_init\_\_()

self.length = length

def calculate\_area(self):

self.area = self.length \*\* 2

# Example usage:

square = Square(5)

square.calculate\_area()

print(square.area)

```

Note: In the example code for Question 5, I assumed that the area should be calculated and stored within the object itself. The `calculate\_area` method updates the `area` attribute of the object.