

```
def recursive_sequence(n):
```

```
    if n == 1:
```

```
        return 1
```

```
    else:
```

```
        return 2 * recursive_sequence(n-1) + 1
```

Data Structures and Algorithms IT2070

```
while True:
```

```
    num = int(input("Enter a number (-1 to exit): "))
```

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

```
        print("Finished")
```

```
        break
```

```
    else:
```

```
        result = recursive_sequence(num)
```

```
        print(f"Output: {result}")
```

Paper Number 6 (20 marks)

Year two Semester two 2021 September

Online Examination

Sri Lanka Institute of Information Technology

Time: 20 minutes

Consider the following recursive sequence of numbers:

1, 3, 7, 15, 31

- Design a **recursive** Python function to produce the above output when a user enters an integer from the keyboard.
- Use the loop to run the program and display the correct output until user input -1.
- Sample Output:

Enter number:1

Output:1

Enter number:2

Output:3

Enter number:3

Output:7

Enter number: -1

Output: Finished

Note: 0 marks for non-recursive solutions

Upload your answer using given in the course web link “Paper Number 6”

Grading Sheet:

- 1) Program is compiling. **2 marks**
- 2) Program is running successfully. **2 marks**
- 3) Program takes the input number as integer. **2 marks**
- 4) Correct implementation recursive function. **6 marks**
- 5) Display the output correctly **2 marks**
- 6) Use of loop correctly **4 marks**
- 7) Include comments and properly indented. **2 marks**
- 8) Plagiarism testing tool results: