**Lab Book**

**Exercise 2.1**

**Diagram:**

Connect2

Connect1

Multiplier

Consumer

Producer

**Code:**

**def** processList =

[

**new** Producer ( outChannel: connect1.out() ),

//insert here an instance of multiplier with a multiplication factor of 4

**new** Multiplier(inChannel: connect1.in(), factor: 4, outChannel: connect2.out()),

**new** Consumer ( inChannel: connect2.in() )

]

**while** (i > 0)

{

// write i \* factor to outChannel

outChannel.write(i\*factor);

// read in the next value of i

i = inChannel.read();

}

**while** ( i > 0 )

{

//insert a modified println statement

println i;

i = inChannel.read()

}

**Output:**

3

next: 12

5

next: 20

6

next: 24

**Exercise 2.2**

**Diagram:**

Connect2

Connect1

CreateSetsOfEight

ListToStream

GenerateSetsOfThree

**Code:**

GenerateSetsOfThree

//write the terminating List as per exercise definition

outChannel.write([-1,-1,-1])

ListToStream

// hint: output list elements as single integers

**for**(j **in** 0..<inList.size)

{

outChannel.write(inList[j])

}

inList = inChannel.read()

CreateSetsOfEight

**while** (v != -1)

{

**for** ( i **in** 0 .. 7 )

{

// put v into outList and read next input

outList.add(v)

v = inChannel.read()

}

*println* " Eight Object is ${outList}"

outList.clear()

}

**Output:**

Eight Object is [1, 2, 3, 4, 5, 6, 7, 8]

Eight Object is [9, 10, 11, 12, 13, 14, 15, 16]

Eight Object is [17, 18, 19, 20, 21, 22, 23, 24]

Finished

**Questions:**

What change is required to output objects containing six integers?

Change the

**for** ( i **in** 0 .. 7 )

in CreateSetsOfEight to

**for** ( i **in** 0 .. 5 )

How could you paramaterise this in the system to output objects that contain any number of integers?

Instead of changing it to a static value, create a variable setSize and change the loop to:

**for** ( i **in** 0 .. (setSize – 1) )

What happens if the number of integers required in the output stream is not a factor of the total number of integers in the input stream?

The numbers that go beyond the maximum factor are excluded from the output stream.

**Exercise 3.1**

**Diagram:**

**Code:**

**Output:**

**Questions:**