Assignment II

Question 1

1. $\sum_{i=1}^{5} i$

0×30 15

4^8

$1+2+3+4+5 = 15$ $0X30$

$0xaf$

$0xd7$

$0x3x$

$0xe0$

$0x71$

$0xd3$

#	Assembly Code	
0	LOAD #15	load the final total value in accumulator read first value of first accumulator
1	STORE X	create if needed store that value at address X
2	LOAD #0	load 0 to accumulator
3	EQUAL X	execute skip instruction if accumulator = memory location
4	JUMP #7	jump to instruction 7
5	LOAD X	load value of address X
6	HALT	Halt program
7	ADD #1	Add 1 to accumulator
8	JUMP #3	Jump to instruction 3

2.

	IR	ACC	Assembly code
PC = 0	IR = 0x315	ACC = 0x15	LOAD #15
PC = 1	0x4f	0x15	STORE X
PC = 2	0x30	0x00	LOAD #0
PC = 3	0xaf	0x00	EQUAL X
PC = 4	0xd7	0x00	JUMP #67
PC = 7	0x71	0x01	ADD #1
PC = 8	0xd3	0x01	JUMP #3
PC = 3	0xaf	0x01	EQUAL X
PC = 4	0xd7	0x01	JUMP #7
PC = 7	0x71	0x02	ADD #1
PC = 8	0xd3	0x02	JUMP #3
PC = 3	0xaf	0x02	EQUAL X
PC = 4	0xd7	0x02	JUMP #7
PC = 7	0x71	0x03	ADD #1
PC = 8	0xd3	0x03	JUMP #3
PC = 3	0xaf	0x03	EQUAL X
PC = 4	0xd7	0x03	JUMP #7
PC = 7	0x71	0x04	ADD #1
PC = 8	0xd3	0x04	JUMP #3
PC = 3	0xaf	0x04	EQUAL X
PC = 4	0xd7	0x04	JUMP #7
PC = 7	0x71	0x05	ADD #1
PC = 8	0xd3	0x05	JUMP #3
PC = 3	0xaf	0x05	EQUAL X
PC = 4	0xd7	0x05	JUMP #7
PC = 7	0x71	0x06	ADD #1
PC = 5	0xd3	0x06	JUMP #3
PC = 3	0xaf	0x06	EQUAL X
PC = 4	0xd7	0x06	JUMP #7
PC = 7	0x71	0x07	ADD #1
PC = 8	0xd3	0x07	JUMP #3

→ this continues till ACC = address

AFTER #8 when ACC = 15

PC	IR	ACC	Assembly code
3	0xaf	0x15	EQUAL X
5	0x3x	0x15	LOAD X
6	0xe0	0x15	HALT

Question 2

1. infix 6 |+|

   |+| : Stream Integer -> Stream Integer -> Stream Integer

   ~~crossed out~~

   ~~crossed out~~

   ~~crossed out~~

   ~~crossed out~~

   $x \ |+| \ y = (x + y) : | \ (xs \ |+| \ xy)$

2. recurrence :: Integer -> Integer -> ~~Integer~~ Stream Integer

   ~~recurrence crossed out~~

   recurrence 0 0 = 0

   recurrence 1 0 = 1

   ~~crossed out~~

   recurrence $x \ y = $ ~~crossed out~~ $x : | \ $ recurrence $y \ (x \overset{+}{} y)$

   ~~crossed out~~