Binary Shifting

Tuesday, 16 February 2021 5:14 PM

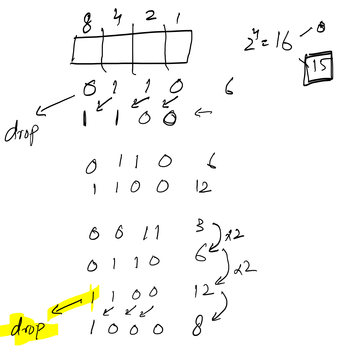
- Logical Shift — Programmable
- Cyclic Shift — Theory.
- Arithmatic Shift.

By shifting we mean moving bits left or right inside register.

Logical Shifting:

Left shifting makes the integer double of its value. Multiple shifts doubles the value with every left shift.

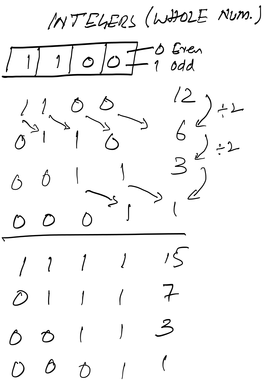
This doubling may only go for as much as the range of given bits.



Logical Right Shift:

Logical right shift makes the number (integer) its half.

All even numbers are exactly divided by 2, but odd numbers lose 0.5 in answer as data in registers is integer.




```
LDD 30
LSL #2
STO 31
END
```

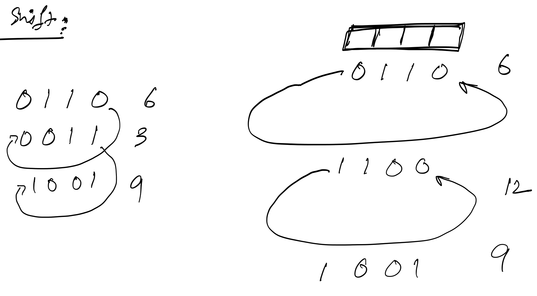
30 | 100
31 | 400

```
LDD 30
LSR #3
STO 31
END
```

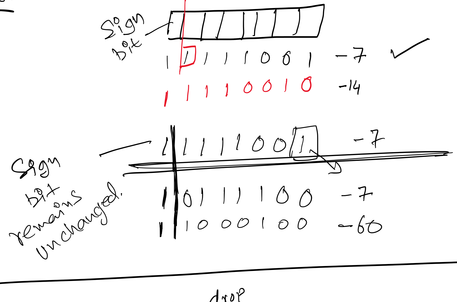
30 | 100
31 |

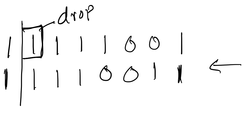
100
50 ①
25 ②
12 ③ ✓

Cyclic Shift:



Arithmatic Shift:





In arithmatic shifting sign bit remains unchanged. While shifting bits get dropped from left and right of remains bits. As a result of shifting when a new bit space is created; it is filled with the bit as sign bit.