

CST8134: In-lab Exercise 13

Shift and Rotate

You need to have a good understanding of what shift and rotate do to data. Write a small program that will read in a number (say a word, 16 bits, but see below), and shift/rotate it some small amount. There are 6 cases; print the result of each one to the screen with an identifying message:

Arithmetic shift right:	ASR
Arithmetic shift left:	ASL
Logical shift right:	LSR
Logical shift left:	LSL
Rotate right:	ROR
Rotate left:	ROL

You can start with a small constant shift, but you should then modify your working program to read in the shift amount. For another extension, read in the size of the number to work on (8, 16, or 32 bit) and try those variations, too.

There's no need to construct a loop, but you can do so if you wish. Decide in advance what you will use to indicate the end of your input. You ought to be able to complete a table that looks something like this:

Input	Size	Shift	ASR	ASL	LSR	LSL	ROR	ROL

Your screen might look like:

```
Enter size (B, W, L): W
Enter shift amount: 3
Enter number: 0010
Results
ASR      0002      ASL      0080
LSR      0002      LSL      0080
ROR      0002      ROL      0080
```

Show your source code for the program and some of its output to your lab instructor before the end of your lab period.

