6. In the Kingdom of Far Far Away, people use an alphabet of two symbols, ▶ and ◀. Words in the language $L_{▶◀}$ of the Kingdom of Far Far Away can be any combinations of these two symbols, e.g. ▶◀▶◀▶◀, ▶◀◀◀, ▶◀, ▶, ◀, ..., with the exception that the first symbol cannot be ◀ unless it is the word ◀. Please write a language translator for the language $L_{▶◀}$ of the Kingdom of Far Far Away that performs the following tasks:
   (1) Read and parse a sentence in $L_{▶◀}$ and then translate it to a binary number, e.g. ▶◀▶◀▶◀ is translated to 10101010, and ▶◀◀◀ to 1000
   (2) Convert the binary number into its decimal value, e.g. 1000 to 16
   (3) Generate Java bytecode assembly that (a) prints the original expression, (b) prints the binary expression, and then (c) computes and prints the decimal result, e.g.
      ▶◀◀◀ => 1000 => 16

Please write your $L_{▶◀}$ Translator program:
   (a) [10] Write down your LEX program and YACC program that parse an $L_{▶◀}$ expression and translate it to a binary form
   (b) [10] Implement the actions in your YACC productions so that they will generate Java bycode instructions to perform the above tasks
   (c) [5] Use your $L_{▶◀}$ Translator program to translate the expression ▶◀▶◀▶◀ into a Java bytecode program

   For your reference,

PRINT Statements *print expression;*

The PRINT statements in sC are modeled by invoking the *print* method in *java.io* package using the following format

```
getstatic java.io.PrintStream java.lang.System.out
...    /* compute expression */
invokevirtual void java.io.PrintStream.print(java.lang.String)
```

if the type of *expression* is a string. Types *int* or *boolean* will replace *java.lang.String* if the type of *expression* is integer or boolean. Similarly, a PRINTLN statement for an *expression* of the string type will be compiled to the following

iload	istore	sipush	ldc	iconst_0
iconst_1	iadd	isub	imul	idiv
irem	ineg	ior	iand	ixor
getfield	putfield	getstatic	putstatic	ifeq
iflt	ifle	ifgt	ifge	goto
invokestatic	ireturn	return		