7 a)

Symbol	Token	
	Value	Type
Start	60	Variable
0.1	61	Constant
Counter	62	Variable
10	63	Constant

b)

60	01	61	4E	62	01	60	50	63	52	62	02	60	53

c) i) Syntax analysis

ii) Checking the grammar of the program and producing an error report.

d) i) Minimise the time taken to execute the program.

ii) Replace 2 * 6 with the value 12

iv)

```
LDD 436
ADD 437
STO 612
ADD 438
STO 613
```

8 a) i) There should be a colon before the equals sign.

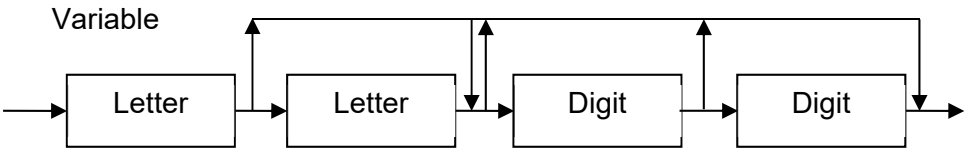
ii) The second operand should be an unsigned integer and not a variable.

iii) `A32` is not a variable, as a variable should be a letter followed by a single digit.

b)

```
<assignment_statement> ::= <variable> := <variable> <operator>
<unsigned_integer>
<variable> ::= <letter> <digit>
<unsigned_integer> ::= <digit> | <digit> <unsigned_integer>
<letter> ::= A | B | C
<operator> ::= + | - | * | ^
```

c)

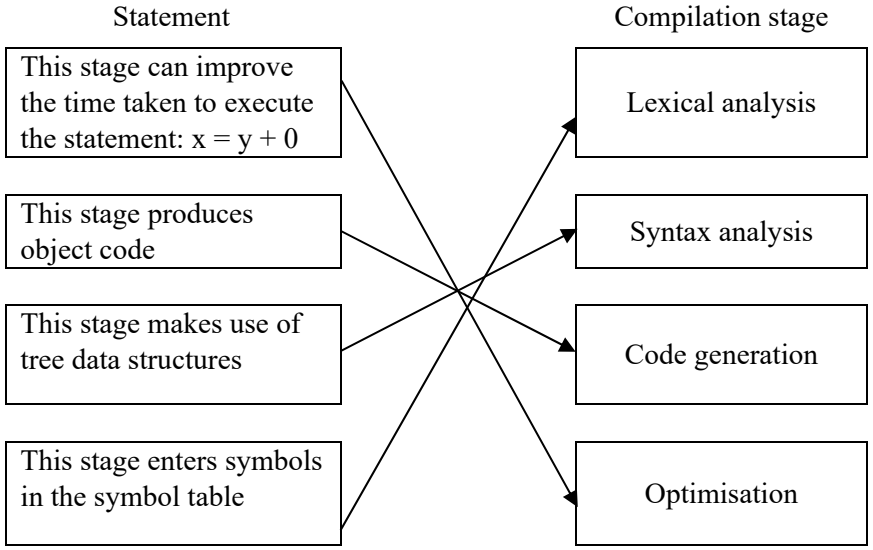


d)

```
<assignment_statement> ::= <variable> := <variable> <operator> <real>

<real> ::= <unsigned_integer> . <unsigned_integer>
```

9 a)



b) `P Q + R S / -`

c) i)

					2			
				3	3	5		
	2		1	1	1	1	6	
2	2	4	4	4	4	4	4	-2

ii) `b * a - (c + d + a)`

iii) In RPN evaluation of operators is left to right so there is no need for brackets to establish precedence.