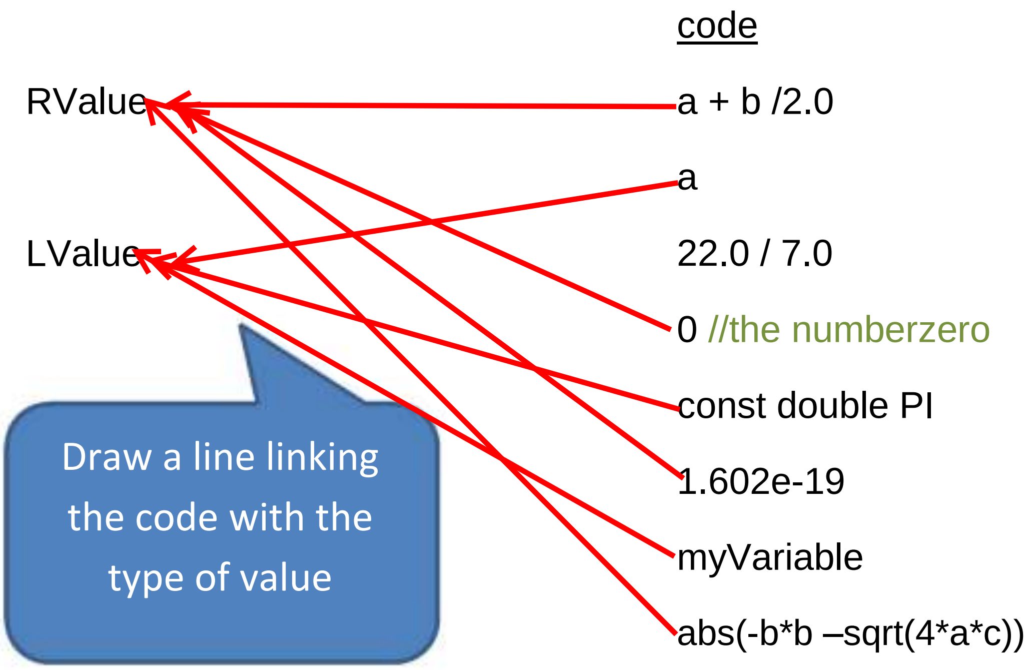
SWE20004 TSD Lab week 03

Task 3.1 Classify these sections of code as either RValues (right side) or LValues (left side) in an assignment statement



code

RValue

LValue

a + b /2.0

a

22.0 / 7.0

0 //the numberzero

const double PI

1.602e-19

myVariable

abs(-b*b –sqrt(4*a*c))

Draw a line linking the code with the type of value

Task 3.2 Match the manipulators and flags to their 'stickiness' (remain in effect until changed).

Stickiness	**instruction**
sticky	setw(n)
not sticky	fixed
	cout.fill('0')
	setprecision(n)
	setiosflags(…)

Draw a line linking the instruction with the stickiness

Task 3.3 Evaluate these expressions as a C++ program would.

Expression	**Result**	**Explanation**
1/3	0	type int givex int result
1.0/3.0	0.3333	float type returns decimal value
a = 2	2	assignment operator sets the value
x = y = 2.0	2.0	x set to value of y which is set to 2.0
0 == 0	true	== is a condiontial statement
static_cast<int>(9.999)		
(double)1/(double)2		
32.0 / float(24)		
(int)((double)23/ (static_cast<double>(16/11+1)))		
(true && false || true)		
(!false ||! true || (false && true))		

Task 3.4 Write the function call or statement that performs these operations:

x^y pow(x, y)________

23^2 pow(23,2)________

i = i + 1 ______________

convert x degrees to y radians ______________

Task 3.5 What do these objects and ASCII characters (as escaped characters) do? You can look them up.

Expression	**Result**	**Explanation**
\n		
\\		
\"		
\r		
\t		
ends		
\a		
endl		
\xHH		
\ooo		
\'		

Task 3.6 What function allows text with spaces (or 'whitespace') in it to be read from the keyboard into a string variable (C++ string type)?

Task 3.7 What do these manipulators and flags do?

Expression	**Explanation**
cout.fill('#')	
cout.setf(ios::flush)	
cout.setf(ios::right)	
cout.setf(ios::showpos)	
cout.setf(ios::scientific)	
cout.setf(ios::left)	
cout.width(n)	
cout.unsetf(ios::fixed)	
cout.setf(ios::fixed)	

Task 3.8 . <u>Programming Problem</u> **(need to submit as a part of assignment 1)**

You are required to produce a text-based form displaying data about a particular computer. You need to

- □ prompt for and input the following values:
  - □ PC serial number (10 digits and letters, no spaces)
  - □ User name (as above)
  - □ Employee name (text including spaces)
  - □ PC type (S=server, D=desktop, L=laptop, T=tablet, P=phone)
  - □ Number of cores (a positive non-zero integer)
  - □ CPU Frequency (in GHz)
  - □ MAC address (a 16 character HEX value stored as a string)
  - □ IP address (IPV4 address stored as 4 short ints)
- □ Calculate the integer version of the IP address using this equation:

```
IP(integer) = iP_part_1 * pow(256., 3)
+ iP_part_2 * pow(256., 2)
+ iP_part_3 * 256
+ iP_part_4
```

the dot. tells the compiler that this number is a floating point type

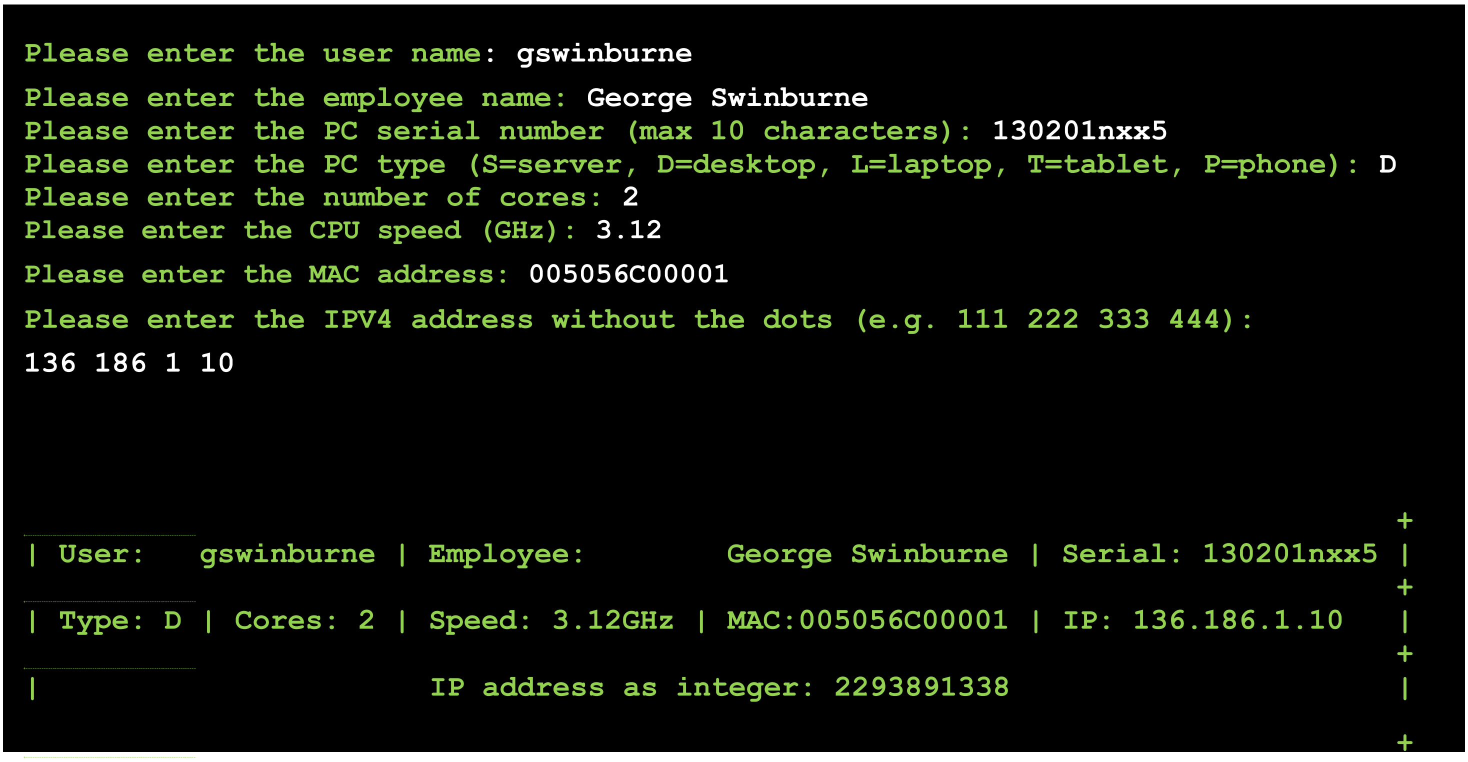
for example, Swinburne's web server at http://136.186.1.10 can also be found at http://2293891338.

i.e. 136x256^3 + 186x256^2 +1x256 + 11 = 2293891338

- □ Display the table on the screen using *iomanip* commands and ASCII characters to match the output shown below.
- □ Complete this Data dictionary (plan of identifiers, data types, sample values):

variable	Identifier	type	test value
User name			gswinburne
Employee name			George Swinburne
Serial number			130201nxx5
PC type			D
Number of cores			2
CPU frequency			3.12
MAC address			005056C00001
IPV4 address			136.186.1.10
IP int address			(calculated)

Your output should look like this:



```
Please enter the user name: gswinburne
Please enter the employee name: George Swinburne
Please enter the PC serial number (max 10 characters): 130201nxx5
Please enter the PC type (S=server, D=desktop, L=laptop, T=tablet, P=phone): D
Please enter the number of cores: 2
Please enter the CPU speed (GHz): 3.12
Please enter the MAC address: 005056C00001
Please enter the IPV4 address without the dots (e.g. 111 222 333 444):
136 186 1 10




+----------------------------------------------------------------------------+
| User:   gswinburne | Employee:        George Swinburne | Serial: 130201nxx5 |
+----------------------------------------------------------------------------+
| Type: D | Cores: 2 | Speed: 3.12GHz | MAC:005056C00001 | IP: 136.186.1.10   |
+----------------------------------------------------------------------------+
|                      IP address as integer: 2293891338                      |
+----------------------------------------------------------------------------+
```