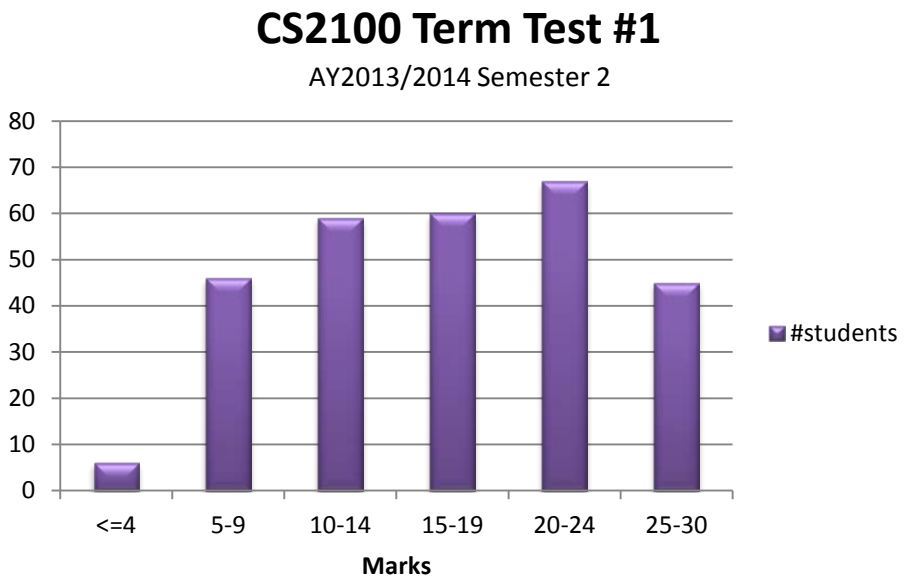
Comments and analysis on CS2100 Term Test #1 (AY2013/4 Semester 2)

283 students sat for the test yesterday. The mean is 16.9 out of 30 marks, or 56%, which is much lower than the mean of the previous two years' tests, which was about 64%. This is despite both myself and my co-lecturer feeling that this year's paper is easier than last year's. I set the paper with the aim of achieving a mean of 65%, so in a sense I did not achieve my aim.

The distribution of the marks, in brackets of 5 marks, is shown in the chart below.



I notice that this year the curve is more "flat". In the past, I was worried for those who got 10 marks and below, and more so this time because there are more of them. If you are one of them, I hope you will put aside some time to revise the materials although we are now moving into the computer organisation part of the module. Note that the first part of the module will still be tested again in the final examination.

The answers are on the CS2100 module website, "Term Tests" page:

http://www.comp.nus.edu.sg/~cs2100/3_ca/termtests.html

You may check your marks on the IVLE gradebook. We will return you your answer scripts at your tutorial tomorrow or Tuesday.

Multiple-choice questions

The table below shows the percentage of students who chose the correct answers, and the percentage of students who chose the most popular wrong answers:

	Q1	Q2	Q3	Q4	Q5
%chose correct answer	D (48.1%)	B (32.9%)	D (75.6%)	E (76.7%)	C (62.9%)
%chose most popular wrong answer	E (28.3%)	C (41.0%)	E (13.8%)	A (7.8%)	A or D (11.0%)

From the table, the easiest questions seem to be Q3 and Q4, with 3/4 of the students getting them right. The hardest question seems to be Q2, where only 1/3 of the students got it right, and 41% of the students chose the most popular wrong answer over the correct answer.

For **Q2**, it can be easily seen that $B{\cdot}F + B'{\cdot}G{\cdot}H + F{\cdot}G{\cdot}H$ can be simplified to $B{\cdot}F + B'{\cdot}G{\cdot}H$ by dropping the third term. This is essentially the **consensus theorem**

$$X{\cdot}Y + X'{\cdot}Z + Y{\cdot}Z = X{\cdot}Y + X'{\cdot}Z$$

Hence, just let X be B, Y be F, and Z be $G{\cdot}H$.

For **Q9**, a number of students gave these answers:

$$P = D + D'{\cdot}B'{\cdot}C$$
$$Q = D + D'{\cdot}B$$

However, from **absorption theorem**, you can immediately see that the above expressions are not simplified SOP expressions. Their respective simplified SOP expressions, after applying absorption theorem, are:

$$P = D + B'{\cdot}C$$
$$Q = D + B$$

For **Q11**, a number of students gave the correct answers for part (a), but got the number of additional logic gates wrong for part (b). These students wrote 2 additional logic gates as their answer for part (b), probably one XOR gate for $A \oplus B$, and one inverter for A'. A few students asked me during the test whether an inverter is considered a gate, to which I answered "of course!". However, there is no need for an inverter here, since A' is directly available from the Q' output of the flip-flop.

Both Yuen Jien and I hope to see better results from Term Test #2.

(And to those who wrote something interesting in the speech bubble of ANDroid/NANDroid/NOTdroid/ORdroid, thank you! I've shared a few of them on my facebook status. ☺)

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9 March 2014