

CS1231S Assignment #2
AY2024/25 Semester 1
Deadline: Monday, 4 November 2024, 1:00pm
TEMPLATE FOR SUBMISSION

Q0. Full name:

Tutorial grp: T

Write your full name and tutorial group number above.

Enter your **Student Number** into the box on the right, by filling in your student number at the top row, and shading the digits and check letter.

We are going to use a software to identify your shaded Student Number, so it is very important that you **shade your Student Number correctly**, otherwise you will score zero mark for the assignment! The Student Number you write at the top is for us to identify you in case you have shaded your number wrongly (but do check that you have shaded it correctly!)

STUDENT NUMBER										
A										
U	<input type="radio"/>	0	0	0	0	0	0	0	A	N
A	<input checked="" type="radio"/>	1	1	1	1	1	1	1	B	R
HT	<input type="radio"/>	2	2	2	2	2	2	2	E	U
NT	<input type="radio"/>	3	3	3	3	3	3	3	H	W
		4	4	4	4	4	4	4	J	X
		5	5	5	5	5	5	5	L	Y
		6	6	6	6	6	6	6	M	
		7	7	7	7	7	7	7		
		8	8	8	8	8	8	8		
		9	9	9	9	9	9	9		

Q1. Countning and Probability (Total: 7 marks)

(a)
[1]

(b)
[2]

(c)
[2]

(d)
[2]

Q2. Expected value (Total: 7 marks)

(a)
[2]

(b)
[2]

(c)
[3]

Q3. Functions (Total: 6 marks)

(a)
[1]

(b)
[2]

(c)
[3]

Q4. Hasse Diagrams (Total: 6 marks)

(a)
[2]

(b)
[2]

(c)
[2]

Q5. Mathematical Induction: $2^{4n} - 2^n$ is divisible by 14 for all $n \in \mathbb{Z}_{\geq 0}$ (6 marks)

Q6. Function and Cardinality (Total: 6 marks)

(a) The function f has an inverse.

[2 marks]

(b) $f^{-1}(\{n\})$ is uncountable for some $n \in \mathbb{N}$.

[4 marks]

=== END OF PAPER ===