CS1231 AY1516 Sem1 Exam Solutions

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Preface

In this book, I would be providing solutions to selected questions for the CS1231 A615/16 Sem1 Examinations.

(*As a matter of formatting, I will start each question on a new page.*)

Disclaimer: The solutions I provide are not official solutions, just my own solutions to the questions.

This book is only available as an electronic copy, and not available in print.

Credits to LaTeX, through which this book was typesetted with.

If you happen to spot any mistakes in this book, have suggestions on how to improve this book, or have any other queries, you may reach me at my email.

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1.1 Part A

Q1.

Ans.
B

Workings.
A is definitely out, because $\frac{1}{2} \notin \mathbb{Z}$.

Now,

$$\begin{aligned} & 4x \equiv 2 (\text{mod} 6) \\ \iff & 6 \mid 4x - 2 \\ \iff & \exists k \in \mathbb{Z} \ni 4x - 2 = 6k. \end{aligned}$$

Pick option C, where $x = 3$,

$$\begin{aligned} & 4(3) - 2 = 6k \\ \implies & 10 = 6k \\ \implies & 6 \nmid 10. \end{aligned}$$

Now pick option D, where $x = 1000$,

$$\begin{aligned} & 4(1000) - 2 = 6k \\ \implies & 4000 = 6k \\ \implies & 6 \nmid 4000. \end{aligned}$$

But pick option B, where $x = 3$,

$$\begin{aligned} & 4(3) - 2 = 6k \\ \implies & 12 = 6k \\ \implies & 6 \mid 12. \end{aligned}$$

Hence, option B is the best answer, since there seem to be a solution.

1.2 Part B