Good Morning, Colleagues
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Are there any questions?
Logistics

• Official course evaluation surveys
Logistics

- Official course evaluation surveys
- Remaining modules published
Logistics

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- Remaining modules published
- Due date of last homework?
Logistics

- Official course evaluation surveys
- Remaining modules published
- Due date of last homework?
  - Wed. at discussion section would mean you can go over it
  - Thurs. in class gives you an extra day
Questions / Important Points

• Is proving program correctness always done with induction?
Questions / Important Points

- Is proving program correctness always done with induction?
- Importance of loop invariants
Questions / Important Points

- Is proving program correctness always done with induction?

- Importance of loop invariants
  - Start by identifying the loop invariant
Questions / Important Points

• Is proving program correctness always done with induction?

• Importance of loop invariants
  – Start by identifying the loop invariant
  – Prove that it’s true at the beginning
Questions / Important Points

• Is proving program correctness always done with induction?

• Importance of loop invariants
  – Start by identifying the loop invariant
  – Prove that it’s true at the beginning
  – Prove that it stays true
Questions / Important Points

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• Importance of loop invariants
  – Start by identifying the loop invariant
  – Prove that it’s true at the beginning
  – Prove that it stays true (induction)
Questions / Important Points

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• Importance of loop invariants
  – Start by identifying the loop invariant
  – Prove that it’s true at the beginning
  – Prove that it stays true (induction)
  – Prove termination
Questions / Important Points

- Is proving program correctness always done with induction?

- Importance of loop invariants
  - Start by identifying the loop invariant
  - Prove that it’s true at the beginning
  - Prove that it stays true (induction)
  - Prove termination
  - Prove that at termination, the loop invariant leads to a correct result
An Iterative Algorithm

- Prove the correctness of Insertion Sort
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A Recursive Algorithm

- Prove the correctness of Binary Search
A Recursive Algorithm

- Prove the correctness of Binary Search
  - What’s your proof strategy?
A Recursive Algorithm

- Prove the correctness of Binary Search
  - What’s your proof strategy?
  - What’s your predicate?