

Data Structures - Fall 2021

Homework Assignment 06

Due: September 27, 2021 @ 6am uploaded to Canvas
Total Possible Points: 20

Submission Checklist:

- Are you submitting a PDF?
- Is your name somewhere **inside** the document you are submitting?
- Does the name of the PDF file match the format of *lastname-hw00.pdf*?
- Are any diagrams included in your submission created in a computer-based drawing application (as compared to hand-drawn and photoed using your phone)?
- Is all the code you include in a fixed point font such as Courier New or Fira Mono?

To complete this assignment, you'll need to make a copy in your own Google Drive account or download the file as a MS Word Document. Both of these can be accomplished from the File menu.

1. Using the following flight data and assuming you are using backtracking to enumerate all the flights from Dallas to Chicago, provide the state of the stack when it would have the maximum number of elements on it. [5 points]

5

```
Dallas Austin 98 47 Spirit
Dallas Austin 98 59 American
Austin Houston 95 39 United
Dallas Houston 101 51 Spirit
Austin Chicago 144 192 American
```

2. Construct a binary search tree using the following values. You only need to provide the final tree, not the tree after each insert. [5 points]

37, 52, 49, 21, 19, 25, 76, 77, 75, 22, 23, 24

Insert tree here.

3. Using the resulting tree from question 1 to answer the following questions. [2 points each]

a) List all leaves of the tree.

b) What are the descendant nodes of 25?

c) List the ancestors of 24.

d) Provide a pre-order traversal of the tree.

e) Provide a post-order traversal of the tree.