STAT 541: Test 1

Table 1 and Table 2 contain tree measurements; the column headers are the actual variable names. Table 1 represents a "scouting" trip, in which circumference at breast height (cbh) is measured in inches, and a rough measurement of height is made with a clinometer. Table 2 represents a follow-up trip for the largest specimens of each species, in which maximum and minimum crown width is measured and a more precise measure of height is taken with a laser rangefinder.

1. For the scouting trip, write code to print a report entitled "Scouting Trip" with the header for cbh as "Circumference at Breast Height (in)" and the header for height as "Clinometer Height (ft)". Graduate students should print the report with entries sorted by height, from tallest to shortest.

2. All the trees from table Scout were measured on December 14, 2013. Write the commands to print a report of Scout that adds the date to every entry in an appropriate date format.

3. Write code for a report that extracts only American Beech and Persimmon records from Scout two different ways; one method should use "contains" .

4. What output would the following commands generate? Briefly describe why a right join might be used.

```
proc sql;
select one.ID, one.species, one.cbh, two.maxcrown, two.mincrown,
one.height as clinometerht, two.height as laserht from scout as one
right join verify as two on (one.ID=two.ID);
quit;
```

5. Write code to save the above report as a table named ChampionTrees.

6. On the verification trip, a larger persimmon was found and measured. Using the method of your choice, add the following record listing ID, species, cbh, maxcrown, mincrown, and laserht.

```
0502 Persimmon 85 65 50 122
```

7. For the ChampionTree database, the midrange for the crown is the average of the maximum and minimum. Write code for a report that computes the midrange of he crown (the column should be named Crown) and then prints it in a report along with the other columns in ChampionTrees. Write code to extract only those records with crown between 40 and 60.

8. What would the report from the following code look like?

```
proc sql;
title "Largest trees of each species";
select species, max(cbh) as maxcbht label="Cbh", max(height) as
maxheight label="Height" from Scout
group by Species;
quit;
```

9. Graduate students should modify the above code to include only species with maximum height greater than 100 feet. Provide only the code, not the report.

10. What would the output from the following code look like? What would the output look like if "except" was replaced with "except all"? Assume ChampionTrees includes the additional record created in Question 6.

```
proc sql;
select species from ChampionTrees
except
select species from Scout;
quit;
```

11. Write a nested query that uses an in-line view to find the average cbh of all the trees measured in Scout, and then selects the trees with cbh less than that average.

Data sets

ID	species	cbh	height
0101	Sweetgum	168	115
0201	American Beech	104	105
0202	American Beech	112	110
0301	Laurel Oak	277	120
0401	Ironwood	60.5	70
0302	Laurel Oak	184	115
0203	American Beech	134	120
0501	Persimmon	83	105

Table 1: Data Set Scout. Tree ID, Tree Species, Circumference at breast height (inches), Clinometer Height (feet)

ID	maxcrown	mincrown	height
0101	110	67	123
0203	105	85	132
0401	45	25	72
0301	130	112	123
0501	55	45	109

Table 2: Data Set Verify. Tree ID, Maximum Crown Width (feet), Minimum Crown Width (feet), Laser Rangefinder Height (feet)