Final Stat 302, March 17, 2014
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Questions 1-15 count as 4 points each, the rest as 6 points each (180 total).

1. Could Y and y refer to different objects within the same R work space?

2. If \( xx <- c(1:7,5,5:2) \) what will \( xx[xx!=5] \) give you?

3. If \( fx <- function(x,y)\{x-y\} \) what would \( fx(c(3,5),1:3) \) give you?

4. If \( x <- matrix(12:1,ncol=6,byrow=T) \) what is \( x[-2,-1] \)?

5. What is the result of \( \text{rev(seq}(1,5,.9)) \)?

6. What is the result of \( (5:1)[1:5 > 2.5] \)?

7. If \( x <- 6:1 \) and \( x[x!=5] <- 0 \), what is the final result of \( x \)?

8. What is the result of \( \text{which}(6:1 > 5) \)?

9. What results from \( 3^(1:3)-c(1,3,3)^(1:3) \)?

10. For \( x <- \text{c}(\text{NA},1:2) \) and \( y <- c(2:1,\text{NA}) \) what is \( \text{sum} (\text{is.na}(x)==\text{is.na}(y)) \)?

11. If \( L <- \text{list}(V = 6:1, F = \text{function}(x)\{x**2+1\}) \), what are \( L[V[3]] \) and \( L[F(3)] \)?
12. Can a numeric vector, a character vector of same length and a function exist within the same data frame?

13. If \( x <- c(NA,3,5,NA,34,NA) \) what is the result of \( \text{sum}(\text{is.na}(x)) \)?

14. If \( x <- c(NA,3,5,NA,34) \) and \( x[\text{is.na}(x)] <- 999 \), what is \( x[1:2] \)?

15. Sketch the effect of

   ```r
   plot(1:2,2:1,xlab="x",ylab="y",pch=16)
   lines(1:2,2:1)
   ```

16. Circle just one as best answer. SAS is a) a company b) a statistical package c) a general purpose programming language d) all of the previous.

17. ```sas
   data patient_data;
   input Age Sex Height Weight;
   datalines
   33 F 65 130
   48 M 71 160
   run;
   title "Patient Data";
   proc print data=patient_data nob; 
   run;
   ```

   Mark all errors in the code above (circle and/or correct them).

18. How do we end each DATA and PROC statement in a SAS program?

19. What are the limitations on naming variables and data sets in SAS?
20. Could Y and y refer to different variables within the same SAS program?

21. When would \* . . . \* be required in place of * . . . ; when commenting in SAS code?

22. How is the character data type signaled in the input line of a DATA step?

23. If the variables age and Age appear in the same SAS program, how may that effect any output when the variable is used as label?

24. What is the difference in result when I use the function call UNIFORM(4711) repeatedly and when I do the same with UNIFORM(0)?

25. What will be the value of the variable Level when I invoke
   
   if Chol < 200 then Level = 'Low' ;

   whenever I encounter the missing value . for Chol?

26. For the following SAS program explain the significance of lines 2 to 4. What do they effect?

   libname learn "U:\learn" ;
   libname data "U:\data";
   data data.test;
   set learn.blood;
   run;
   title "The Blood Data";
   proc print data = data.test noobs;
   run;

27. When encountering in SAS code the statement Score = mean(of Q1-Q10) in dealing in summary fashion with the variables Q1, Q2, . . . , Q10, why is the word of in front of Q1 needed and what might happen if we leave it out?

28. What will the SAS function call n(of Q1-Q10) return?
29. Does the **MEAN** function ignore missing values?

30. Discuss the meanings of the essential differences in the following two SAS programs

```sas
libname mydata "U:\data";
data patient1; * data set name;
   infile "U:\data\patient.txt";
   input ID Age Sex $;
run;
title "Patient DATA 1";
proc print data= patient1 noobs; run;

and

libname mydata "U:\data";
data mydata.patient1; * data set name;
   infile "U:\data\patient.csv" dsd;
   input ID Age Sex $; run;
title "Patient DATA 1";
proc print data= mydata.patient1; run;
```

31. Assume either of the two SAS programs in 30 have run.
   When you delete `U:\data\patient1.sas7bdat` then `patient1` also disappears from the temporary SAS Library folder `Mydata`.
   TRUE or FALSE?

32. Assume either of the two SAS programs in 30 have run.
   When you delete `patient1` from the temporary SAS Library folder `Mydata` its corresponding SAS data set also disappears from `U:\data`.
   TRUE or FALSE?

33. What is the effect of the following SAS program?

```sas
libname mydata 'U:\data';
ods csv file='U:\data\odsexample.csv';
proc print data=mydata.patient4 noobs; run;
ods csv close;
```
34. Sketch labels and headers for the output you would see from the following.

```plaintext
libname mydata "U:\data";
title "Age Summary";
proc means data=mydata.patient4
   n mean std median clm alpha=.005;
   var age; run;
```

35. Sketch the output of `proc print` in following program, with correct entries in column 2.

```plaintext
data stat_student;
   infile "U:\data\student.txt";
   input Age Major $ GPA;
   if Major eq "Stat";
run;
title "Stat Student Data";
proc print data = stat_student noobs;
run;
```