

Intro to SAS HW Chapter 6

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Q1 (5), Q2(5) Q5(5) Q10(5), Q12(5), Q20(10), Q23(10), Q28(5 for each a-e) and Q31 (5 for each a-f) with a total 100 points

HW Chapter 6 Q1

$$\underline{100} / \underline{100} = 100\%$$

1. The data sets APR, MAY, and JUN have one observation for each day in the corresponding month. How many observations will be in the resulting data set called MONTHS?

```
DATA months;  
SET apr may jun;  
RUN;
```

- a. 0
- b. 30
- c. 60
- c. 91

C. 91

HW Chapter 6 Q2

2. Which statement is required when interleaving data sets but not when stacking data sets?

- a. SET
- b. BY
- c. MERGE
- d. UPDATE

B. BY

HW Chapter 6 Q5

5. Suppose you would like to use the following program to combine the SAS data set DEMOGRAPHICS, which contains the variables ID, Age, Gender, and Date, with the SAS data set MEDICALHX, which contains the variables ID, PreviousTreatment, and Date. Assume that both data sets are sorted by ID. Which of the following will happen?

```
DATA patients;  
    MERGE demographics medicalhx;  
    BY ID;  
RUN;
```

- a. The variable Date in DEMOGRAPHICS will overwrite the variable Date in MEDICALHX for observations with common ID values
- b. The variable Date in MEDICALHX will overwrite the variable Date in DEMOGRAPHICS for observations with common ID values
- c. Both Date variables will be included as separate variables
- d. SAS will give you an error message

- B. The variable Date in MEDICALHX will overwrite the variable Date in DEMOGRAPHICS for observations with common ID values

HW Chapter 6 Q10

10. Consider the following SAS data set and program. What value will be calculated for AvgExam1 for the third observation?

EXAMS

SID	Group	Exam1	Exam2	Exam3
092363	Major	80	75	85
057781	Major	65	85	75
082944	Minor	85	90	90
089813	Minor	70	70	80

```
PROC SQL;  
  CREATE TABLE e1avg AS  
    SELECT *, MEAN(Exam1) AS AvgExam1  
    FROM exams;  
RUN;
```

- a. .
- b. 72.5
- c. 75
- d. 77.5

C 75

HW Chapter 6 Q12

12. Consider the following SAS data set and program. How many variables will be in the resulting data set called PAYTYPE?

EMPLOYEES

ID	Gender	Age	Hours	Wage
1234	Male	32	25	25.20
4567	Female	28	40	17.80
8910	Male	25	40	19.45
3456	Female	20	22	10.50

```
DATA paytype (DROP = Hours Wage);  
  SET employees (DROP = Age);  
  Pay = Hours * Wage;  
RUN;
```

- a. 1
- b. 3
- c. 4
- d. 5

B. 3

HW Chapter 6 Q20

20. Suppose an instructor has two SAS data sets with student grades, one for each of the sections that he is teaching this term. Both data sets contain the variables StudentName, StudentID, and FinalScore. He would like to combine these data sets so that he can use one PROC MEANS to calculate descriptive statistics to be compared between the sections. Describe one way to combine the data and what statements would be required in PROC MEANS.

Since the students are of different sections, it would not make sense to join/merge them horizontally because there should be no overlapping studentID.

Instead, we should stack the 2 datasets together and create 2 new variables. Section is a variable indicating if a student belongs to section 1 or section 2. In PROC MEANS, we can set the VAR = FinalScore and set BY = Section.

HW Chapter 6 Q23

23. Describe any advantages of using PROC SQL to join SAS data sets or to add summary statistics compared to the traditional SAS programming methods that use a MERGE statement in a DATA step.

Advantages of using PROC SQL to join SAS datasets instead of using MERGE statements include: the datasets do not have to be sorted prior to joining, the variables used for merging do not need to have the same name, and the summary statistic can be directly calculated in SQL (you usually need an additional step of PROC MEANS when using a MERGE statement).

HW Chapter 6 Q28

28. The local school district has a SAS data set called DISTRICT that contains the rubric used for classifying teachers' annual evaluations. The rubric is based on two components: a teacher score and a curriculum grade. Using these components, an overall rating for the teacher can be determined. The data for 10 elementary school teachers who are due for evaluation are stored in the SAS data set called TEACHERS.
- a. Examine these SAS data sets including the variable labels and attributes. Combine the two SAS data sets with a DATA step so that the district rating is properly assigned to each teacher.
 - b. In the same DATA step as part a), eliminate any observation that does not match to a teacher.
 - c. Sort the resulting data set by teacher name so that administrators can easily locate each teacher's rating.
 - d. Repeat parts a) and b) using PROC SQL.
 - e. Add a comment to your program that states the number of observations and variables in the final data set from part c).

28A

```
/* 28A */
```

```
DATA DISTRICT;  
  set '/home/u62223361/Intro to SAS/HW6/district.sas7bdat';  
RUN;  
  
DATA PROJECTS;  
  set '/home/u62223361/Intro to SAS/HW6/projects.sas7bdat';  
RUN; This project data did not belong to this question  
  
DATA TEACHERS;  
  set '/home/u62223361/Intro to SAS/HW6/teachers.sas7bdat';  
RUN;  
  
DATA USERS;
```

```
set '/home/u62223361/Intro to SAS/HW6/users.sas7bdat';
RUN;
```

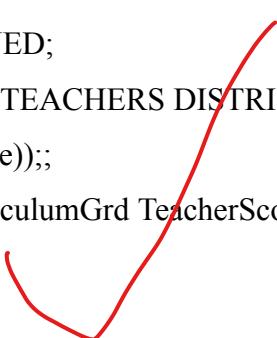
```
PROC CONTENTS DATA = DISTRICT;
RUN;
```

```
PROC CONTENTS DATA = TEACHERS;
RUN;
```

```
PROC SORT DATA = DISTRICT;
  BY CG TS;
RUN;
```

```
PROC SORT DATA = TEACHERS;
  BY CurriculumGrd TeacherScore;
RUN;
```

```
DATA COMBINED;
  MERGE TEACHERS DISTRICT (RENAME=(CG=CurriculumGrd
TS=TeacherScore));
  BY CurriculumGrd TeacherScore;
```



```

1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /* 28A */
70
71      DATA DISTRICT;
72          set '/home/u62223361/Intro to SAS/HW6/district.sas7bdat';
NOTE: Data file WC000001.DISTRICT.DATA is in a format that is native to another host, or the file encoding does not match the
session encoding. Cross Environment Data Access will be used, which might require additional CPU resources and might reduce
performance.
73      RUN;

NOTE: There were 25 observations read from the data set /home/u62223361/Intro to SAS/HW6/district.sas7bdat.
NOTE: The data set WORK.DISTRICT has 25 observations and 3 variables.
NOTE: DATA statement used (Total process time):
      real time      0.00 seconds
      user cpu time  0.00 seconds
      system cpu time 0.00 seconds
      memory       994.84k
      OS Memory    21924.00k
      Timestamp    04/09/2024 03:46:58 AM
      Step Count   203  Switch Count  3
      Page Faults 0
      Page Reclaims 220
      Page Swaps   0
      Voluntary Context Switches 25
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 264

74      DATA PROJECTS;
75          set '/home/u62223361/Intro to SAS/HW6/projects.sas7bdat';
NOTE: Data file WC000001.PROJECTS.DATA is in a format that is native to another host, or the file encoding does not match the
session encoding. Cross Environment Data Access will be used, which might require additional CPU resources and might reduce
performance.
76      RUN;

NOTE: There were 7266 observations read from the data set /home/u62223361/Intro to SAS/HW6/projects.sas7bdat.
NOTE: The data set WORK.PROJECTS has 7266 observations and 4 variables.
NOTE: DATA statement used (Total process time):
      real time      0.00 seconds
      user cpu time  0.01 seconds
      system cpu time 0.00 seconds
      memory       1378.40k
      OS Memory    22184.00k
      Timestamp    04/09/2024 03:46:58 AM
      Step Count   204  Switch Count  3
      Page Faults 0
      Page Reclaims 137
      Page Swaps   0
      Voluntary Context Switches 22
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 520

77      DATA TEACHERS;
78          set '/home/u62223361/Intro to SAS/HW6/teachers.sas7bdat';
NOTE: Data file WC000001.TEACHERS.DATA is in a format that is native to another host, or the file encoding does not match the
session encoding. Cross Environment Data Access will be used, which might require additional CPU resources and might reduce
performance.
79      RUN;

NOTE: There were 10 observations read from the data set /home/u62223361/Intro to SAS/HW6/teachers.sas7bdat.
NOTE: The data set WORK.TEACHERS has 10 observations and 3 variables.
NOTE: DATA statement used (Total process time):
      real time      0.00 seconds
      user cpu time  0.00 seconds
      system cpu time 0.00 seconds
      memory       1177.96k
      OS Memory    21924.00k
      Timestamp    04/09/2024 03:46:58 AM
      Step Count   205  Switch Count  3
      Page Faults 0
      Page Reclaims 115
      Page Swaps   0
      Voluntary Context Switches 22
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 264

```

```

80      DATA USERS;
81          set '/home/u62223361/Intro to SAS/HW6/users.sas7bdat';
NOTE: Data file WC000001.USERS.DATA is in a format that is native to another host, or the file encoding does not match the session
encoding. Cross Environment Data Access will be used, which might require additional CPU resources and might reduce
performance.
82      RUN;

NOTE: There were 1797 observations read from the data set /home/u62223361/Intro to SAS/HW6/users.sas7bdat.
NOTE: The data set WORK.USERS has 1797 observations and 7 variables.
NOTE: DATA statement used (Total process time):
      real time          0.00 seconds
      user cpu time     0.01 seconds
      system cpu time   0.00 seconds
      memory            1214.71k
      OS Memory         21924.00k
      Timestamp         04/09/2024 03:46:58 AM
      Step Count        206   Switch Count  3
      Page Faults       0
      Page Reclaims     85
      Page Swaps        0
      Voluntary Context Switches 21
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 520

83
84      PROC CONTENTS DATA = DISTRICT;
85      RUN;

NOTE: PROCEDURE CONTENTS used (Total process time):
      real time          0.02 seconds
      user cpu time     0.02 seconds
      system cpu time   0.00 seconds
      memory            1798.71k
      OS Memory         22696.00k
      Timestamp         04/09/2024 03:46:58 AM
      Step Count        207   Switch Count  0
      Page Faults       0
      Page Reclaims     198
      Page Swaps        0
      Voluntary Context Switches 0
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 16

86
87
88      PROC CONTENTS DATA = TEACHERS;
89      RUN;

NOTE: PROCEDURE CONTENTS used (Total process time):
      real time          0.02 seconds
      user cpu time     0.03 seconds
      system cpu time   0.00 seconds
      memory            943.71k
      OS Memory         22696.00k
      Timestamp         04/09/2024 03:46:58 AM
      Step Count        208   Switch Count  0
      Page Faults       0
      Page Reclaims     106
      Page Swaps        0
      Voluntary Context Switches 0
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 24

```

```
90
91      PROC SORT DATA = DISTRICT;
92      BY CG TS;
93      RUN;

NOTE: There were 25 observations read from the data set WORK.DISTRICT.
NOTE: The data set WORK.DISTRICT has 25 observations and 3 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time          0.00 seconds
      user cpu time     0.00 seconds
      system cpu time   0.00 seconds
      memory            960.18k
      OS Memory         22696.00k
      Timestamp          04/09/2024 03:46:58 AM
      Step Count          209  Switch Count  2
      Page Faults        0
      Page Reclaims       119
      Page Swaps          0
      Voluntary Context Switches 12
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 264

94
95      PROC SORT DATA = TEACHERS;
96      BY CurriculumGrd TeacherScore;
97      RUN;

NOTE: There were 10 observations read from the data set WORK.TEACHERS.
NOTE: The data set WORK.TEACHERS has 10 observations and 3 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time          0.00 seconds
      user cpu time     0.00 seconds
      system cpu time   0.00 seconds
      memory            935.03k
      OS Memory         22696.00k
      Timestamp          04/09/2024 03:46:58 AM
      Step Count          210  Switch Count  2
      Page Faults        0
      Page Reclaims       117
      Page Swaps          0
      Voluntary Context Switches 12
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 272
```

```

1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      DATA COMBINED;
70      MERGE TEACHERS DISTRICT  (RENAME=(CG=CurriculumGrd TS=TeacherScore));;
71      BY CurriculumGrd TeacherScore;
72
73
74      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
84

```

The CONTENTS Procedure			
Data Set Name	WORK.DISTRICT	Observations	25
Member Type	DATA	Variables	3
Engine	V9	Indexes	0
Created	04/08/2024 23:46:59	Observation Length	32
Last Modified	04/08/2024 23:46:59	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		

Engine/Host Dependent Information			
Data Set Page Size	131072		
Number of Data Set Pages	1		
First Data Page	1		
Max Obs per Page	4078		
Obs in First Data Page	25		
Number of Data Set Repairs	0		
Filename	/saswork/SAS_workE95F0001AB7C_odaws01-usw2-2.oda.sas.com/SAS_work9EB00001AB7C_odaws01-usw2-2.oda.sas.com/district.sas7bdat		
Release Created	9.0401M7		
Host Created	Linux		
Inode Number	1476397603		
Access Permission	rw-r--r--		
Owner Name	u62223361		
File Size	256KB		
File Size (bytes)	262144		

Alphabetic List of Variables and Attributes				
#	Variable	Type	Len	Label
2	CG	Char	2	Curriculum grade
3	Rating	Char	20	District rating
1	TS	Num	8	Teacher score

The CONTENTS Procedure

Data Set Name	WORK.TEACHERS	Observations	10
Member Type	DATA	Variables	3
Engine	V9	Indexes	0
Created	04/08/2024 23:46:59	Observation Length	24
Last Modified	04/08/2024 23:46:59	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		

Engine/Host Dependent Information

Data Set Page Size	131072
Number of Data Set Pages	1
First Data Page	1
Max Obs per Page	5431
Obs in First Data Page	10
Number of Data Set Repairs	0
Filename	/saswork/SAS_workE95F0001AB7C_odaws01-usw2-2.oda.sas.com/SAS_work9EB00001AB7C_odaws01-usw2-2.oda.sas.com/teachers.sas7bdat
Release Created	9.0401M7
Host Created	Linux
Inode Number	1476397615
Access Permission	rw-r--r--
Owner Name	u62223361
File Size	256KB
File Size (bytes)	262144

Alphabetic List of Variables and Attributes

#	Variable	Type	Len	Label
3	CurriculumGrd	Char	2	Curriculum grade
2	Teacher	Char	10	Teacher Name
1	TeacherScore	Num	8	Teacher score

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CODE LOG RESULTS OUTPUT DATA

Table: WORK.COMBINED | View: Column names | Filter: (none)

Columns Total rows: 28 Total columns: 4

	TeacherScore	Teacher	CurriculumGrd	Rating
1		1	A	Needs Improvement
2		Reed, C.	A	Fair
3			A	Good
4			A	Great
5			A	Outstanding
6		1	B	Needs Improvement
7		2	B	Fair
8		3	B	Good
9		Jones, K.	B	Great
10		Cox, P.	B	Outstanding
11		1	C	Poor
12		Bryant, A.	C	Needs Improvement
13		Harris, T.	C	Needs Improvement
14		Moore, P.	C	Needs Improvement
15		Shaw, M.	C	Fair
16			C	Good
17		Payne, D.	C	Great
18		Young, R.	C	Great
19			D	Poor
20			D	Poor
21			D	Needs Improvement
22			D	Fair
23			D	Good
24		Allan, C.	F	Poor
25			F	Poor

Property Value

Label

Name

Length

Type

Format

Informat

Messages: 35 User: u62223361

28B

```
/* 28B */
```

```
PROC SORT DATA = DISTRICT;  
  BY CG TS;  
RUN;
```

```
PROC SORT DATA = TEACHERS;  
  BY CurriculumGrd TeacherScore;  
RUN;
```

```
DATA COMBINED;  
  MERGE TEACHERS (IN=InTeachers) DISTRICT (IN=InDistrict  
  RENAME=(CG=CurriculumGrd TS=TeacherScore));;  
  BY CurriculumGrd TeacherScore;  
  IF InTeachers = 1;
```



```

1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /* 28B */
70
71      PROC SORT DATA = DISTRICT;
72      BY CG TS;
73      RUN;

NOTE: Input data set is already sorted, no sorting done.
NOTE: PROCEDURE SORT used (Total process time):
      real time          0.00 seconds
      user cpu time     0.00 seconds
      system cpu time   0.00 seconds
      memory            591.84k
      OS Memory         21668.00k
      Timestamp         04/09/2024 03:53:10 AM
      Step Count        247   Switch Count  0
      Page Faults       0
      Page Reclaims     61
      Page Swaps        0
      Voluntary Context Switches  0
      Involuntary Context Switches 0
      Block Input Operations  0
      Block Output Operations  0

74
75      PROC SORT DATA = TEACHERS;
76      BY CurriculumGrd TeacherScore;
77      RUN;

NOTE: Input data set is already sorted, no sorting done.
NOTE: PROCEDURE SORT used (Total process time):
      real time          0.00 seconds
      user cpu time     0.00 seconds
      system cpu time   0.00 seconds
      memory            591.84k
      OS Memory         21668.00k
      Timestamp         04/09/2024 03:53:10 AM
      Step Count        248   Switch Count  0
      Page Faults       0
      Page Reclaims     51
      Page Swaps        0
      Voluntary Context Switches  0
      Involuntary Context Switches 0
      Block Input Operations  0
      Block Output Operations  0

1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      DATA COMBINED;
70      MERGE TEACHERS (IN=InTeachers) DISTRICT (IN=InDistrict RENAME=(CG=CurriculumGrd TS=TeacherScore));;
71      BY CurriculumGrd TeacherScore;
72      IF InTeachers = 1;
73
74      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
84

```

HW6.sas

CODE LOG RESULTS OUTPUT DATA

Table: WORK.COMBINED | View: Column names Filter: (none)

Columns Total rows: 10 Total columns: 4

	TeacherScore	Teacher	CurriculumGrd	Rating
1		2 Reed, C.	A	Fair
2		4 Jones, K.	B	Great
3		5 Cox, P.	B	Outstanding
4		2 Bryant, A.	C	Needs Improvement
5		2 Harris, T.	C	Needs Improvement
6		2 Moore, P.	C	Needs Improvement
7		3 Shaw, M.	C	Fair
8		5 Payne, D.	C	Great
9		5 Young, R.	C	Great
10		1 Allan, C.	F	Poor

Property Value

Label

Name

Length

Type

Format

Informat

Messages: 36 User: u62223361

28C

/* 28C */

PROC SORT DATA = COMBINED;

BY Teacher;

```

1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /* 28C */
70
71      PROC SORT DATA = COMBINED;
72      BY Teacher;
73
74      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
84

```

HW6.sas x

CODE LOG RESULTS **OUTPUT DATA**

Table: WORK.COMBINED | View: Column names Filter: (none)

Columns Total rows: 10 Total columns: 4 Rows 1-10

	TeacherScore	Teacher	CurriculumGrd	Rating
1		Allan, C.	F	Poor
2		Bryant, A.	C	Needs Improvement
3		Cox, P.	B	Outstanding
4		Harris, T.	C	Needs Improvement
5		Jones, K.	B	Great
6		Moore, P.	C	Needs Improvement
7		Payne, D.	C	Great
8		Reed, C.	A	Fair
9		Shaw, M.	C	Fair
10		Young, R.	C	Great

Property Value

Label

Name

Length

Type

Format

Informat



Messages: 37 User: u62223361

28D

/* 28D */

PROC SQL;

```

CREATE TABLE COMBINED_SQL AS
SELECT Teacher, TeacherScore, CurriculumGrd, Rating
FROM TEACHERS, DISTRICT
WHERE TEACHERS.CurriculumGrd = DISTRICT.CG

```

```

AND TEACHERS.TeacherScore = DISTRICT.TS
ORDER BY TEACHERS.Teacher;
QUIT;

```

```

1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /* 28D */
70
71      PROC SQL;
72      CREATE TABLE COMBINED_SQL AS
73          SELECT Teacher, TeacherScore, CurriculumGrd, Rating
74          FROM TEACHERS, DISTRICT
75          WHERE TEACHERS.CurriculumGrd = DISTRICT.CG
76          AND TEACHERS.TeacherScore = DISTRICT.TS
77          ORDER BY TEACHERS.Teacher;
NOTE: Table WORK.COMBINED_SQL created, with 10 rows and 4 columns.

78      QUIT;
NOTE: PROCEDURE SQL used (Total process time):
      real time            0.00 seconds
      user cpu time        0.01 seconds
      system cpu time     0.00 seconds
      memory              6513.17k
      OS Memory           28088.00k
      Timestamp            04/09/2024 04:05:16 AM
      Step Count           325   Switch Count  2
      Page Faults          0
      Page Reclaims        663
      Page Swaps            0
      Voluntary Context Switches 27
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 272

79
80      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
90

```

HW6.sas

CODE LOG RESULTS OUTPUT DATA

Table: WORK.COMBINED_SQL View: Column names Filter: (none)

Total rows: 10 Total columns: 4

	Teacher	TeacherScore	CurriculumGrd	Rating
1	Allan, C.	1 F	Poor	
2	Bryant, A.	2 C	Needs Improvement	
3	Cox, P.	5 B	Outstanding	
4	Harris, T.	2 C	Needs Improvement	
5	Jones, K.	4 B	Great	
6	Moore, P.	2 C	Needs Improvement	
7	Payne, D.	5 C	Great	
8	Reed, C.	2 A	Fair	
9	Shaw, M.	3 C	Fair	
10	Young, R.	5 C	Great	

Columns

- Select all
- Teacher
- TeacherScore
- CurriculumGrd
- Rating

Property Value

Label

Name

Length

Type

Format

Informat

Messages: 38 User: u62223361

28E

```
/* 28E */  
  
/* # OBS: 10 */  
/* # VARS: 4 */
```



HW Chapter 6 Q31

31. Information Technology Services (ITS) at Central State University has a computing service called “the Grid,” which is offered to faculty, staff, and students. ITS tracks information on registered users in a SAS data set called USERS and information about the projects that they have registered on the Grid in a SAS data set called PROJECTS. Users are allowed to register more than one project at a time. However, only one project can actually be processed at a time.
- a. Examine these SAS data sets including the variable labels and attributes. Add a comment to your program that notes the sort order of the variables in these data sets.
 - b. Combine the USERS and PROJECTS data sets into one SAS data set using a DATA step.
 - c. In the same DATA step as part b), create three SAS data sets for incomplete projects (no end date), completed projects (with an end date), and users with no registered projects.
 - d. In the same DATA step as part c), create a variable that is a cumulative count of the number of projects completed by each user for the completed projects data set only.
 - e. Recreate the completed projects data set using PROC SQL. This time instead of a cumulative counter variable calculate the total number of completed projects per user.
 - f. Add a comment to your program that states the number of observations and variables in each of the final data sets created in part d).

31A

```
/* 31A */
```

```
PROC CONTENTS DATA = PROJECTS;
```



```
RUN;
```

```
/* SORT ORDER: PROJECT ID, USER ID */
```

```
PROC CONTENTS DATA = USERS;
```

```
RUN;
```

```
/* SORT ORDER: USER ID */
```

```
PROC SORT DATA = USERS;
```

```
BY UserID;
```

```
PROC SORT DATA = PROJECTS;
```

```
BY UserID;
```

```
1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68     /* 31A */
70
71     PROC CONTENTS DATA = PROJECTS;
72     RUN;

NOTE: PROCEDURE CONTENTS used (Total process time):
      real time          0.02 seconds
      user cpu time      0.02 seconds
      system cpu time    0.01 seconds
      memory             1933.87k
      OS Memory          23976.00k
      Timestamp           04/27/2024 11:52:27 PM
      Step Count          134   Switch Count  0
      Page Faults         0
      Page Reclaims       216
      Page Swaps          0
      Voluntary Context Switches  2
      Involuntary Context Switches 1
      Block Input Operations  0
      Block Output Operations 16
```

```

73
74      /* SORT ORDER: PROJECT ID, USER ID */
75
76
77      PROC CONTENTS DATA = USERS;
78      RUN;

NOTE: PROCEDURE CONTENTS used (Total process time):
      real time            0.02 seconds
      user cpu time        0.03 seconds
      system cpu time     0.00 seconds
      memory              1133.12k
      OS Memory           23976.00k
      Timestamp            04/27/2024 11:52:27 PM
      Step Count          135   Switch Count  0
      Page Faults         0
      Page Reclaims       114
      Page Swaps          0
      Voluntary Context Switches 0
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 24

79
80      /* SORT ORDER: USER ID */
81
82      PROC SORT DATA = USERS;
83      BY UserID;

NOTE: Input data set is already sorted, no sorting done.
NOTE: PROCEDURE SORT used (Total process time):
      real time            0.00 seconds
      user cpu time        0.00 seconds
      system cpu time     0.00 seconds
      memory              686.25k
      OS Memory           23716.00k
      Timestamp            04/27/2024 11:52:27 PM
      Step Count          136   Switch Count  0
      Page Faults         0
      Page Reclaims       51
      Page Swaps          0
      Voluntary Context Switches 0
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 0

84      PROC SORT DATA = PROJECTS;
85      BY UserID;
86
87      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
97

```

The CONTENTS Procedure

Data Set Name	WORK_PROJECTS	Observations	7266
Member Type	DATA	Variables	4
Engine	V9	Indexes	0
Created	04/27/2024 19:05:33	Observation Length	32
Last Modified	04/27/2024 19:05:33	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	YES
Label			
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		

Engine/Host Dependent Information

Data Set Page Size	131072
Number of Data Set Pages	2
First Data Page	1
Max Obs per Page	4078
Obs in First Data Page	4005
Number of Data Set Repairs	0
Filename	/saswork/SAS_work7D5C00003C49_odaws02-usw2-2.oda.sas.com/SAS_work27C300003C49_odaws02-usw2-2.oda.sas.com/projects.sas7bdat
Release Created	9.0401M7
Host Created	Linux
Inode Number	2550141910
Access Permission	rwxr--r--
Owner Name	u62223361
File Size	384KB
File Size (bytes)	393216

Alphabetic List of Variables and Attributes

#	Variable	Type	Len	Label
4	EndDate	Num	8	End date of project
2	ProjectID	Num	8	Project ID

2	ProjectID	Num	8	Project ID
3	StartDate	Num	8	Start date of project
1	UserID	Num	8	User ID

Sort Information

Sortedby	UserID
Validated	YES
Character Set	ASCII

The CONTENTS Procedure

Data Set Name	WORK_USERS	Observations	1797
Member Type	DATA	Variables	7
Engine	V9	Indexes	0
Created	04/27/2024 19:05:33	Observation Length	128
Last Modified	04/27/2024 19:05:33	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	YES
Label			
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		

Engine/Host Dependent Information

Data Set Page Size	131072
Number of Data Set Pages	2
First Data Page	1
Max Obs per Page	1022
Obs in First Data Page	1001
Number of Data Set Repairs	0
Filename	/saswork/SAS_work7D5C00003C49_odaws02-usw2-2.oda.sas.com/SAS_work27C300003C49_odaws02-usw2-2.oda.sas.com/users.sas7bdat
Release Created	9.0401M7
Host Created	Linux

Engine/Host Dependent Information				
Data Set Page Size	131072			
Number of Data Set Pages	2			
First Data Page	1			
Max Obs per Page	1022			
Obs in First Data Page	1001			
Number of Data Set Repairs	0			
Filename	/saswork/SAS_work7D5C00003C49_odaws02-usw2-2.oda.sas.com/SAS_work27C300003C49_odaws02-usw2-2.oda.sas.com/users.sas7bdat			
Release Created	9.0401M7			
Host Created	Linux			
Inode Number	2550141909			
Access Permission	rw-r--r--			
Owner Name	u62223361			
File Size	384KB			
File Size (bytes)	393216			

Alphabetic List of Variables and Attributes				
#	Variable	Type	Len	Label
2	Class	Char	8	Classification
7	Dept	Char	8	Department
5	Email	Char	55	Email address
3	Fname	Char	20	First name
4	Lname	Char	20	Last name
6	Phone	Char	8	Phone number
1	UserID	Num	8	User ID

Sort Information	
Sortedby	UserID
Validated	YES
Character Set	ASCII

31B

/* 31B */

DATA ITS;

MERGE USERS PROJECTS;

BY UserID;

RUN;

```
1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /* 31B */
70
71      DATA ITS;
72      MERGE USERS PROJECTS;
73      BY UserID;
74      RUN;
```

NOTE: There were 1797 observations read from the data set WORK.USERS.
NOTE: There were 7266 observations read from the data set WORK.PROJECTS.

NOTE: The data set WORK.ITS has 7273 observations and 10 variables.

NOTE: DATA statement used (Total process time):

real time	0.00 seconds
user cpu time	0.00 seconds
system cpu time	0.01 seconds
memory	2801.37k
OS Memory	25260.00k
Timestamp	04/27/2024 11:54:09 PM
Step Count	143 Switch Count 2
Page Faults	0
Page Reclaims	388
Page Swaps	0
Voluntary Context Switches	11
Involuntary Context Switches	0
Block Input Operations	0
Block Output Operations	2312

```
75
76      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
86
```

HW6.sas × HW7.sas × HW8.sas × HW9.sas ×

CODE LOG RESULTS OUTPUT DATA

Table: WORK.ITS | View: Column names | Filter: (none)

Columns Total rows: 7273 Total columns: 10 Rows 1-100

		UserID	Class	Fname	Lname	Email
<input checked="" type="checkbox"/>	Select all	1	1 Faculty	CHARLES	PORTER	charles.porter@csu.edu
<input checked="" type="checkbox"/>	UserID	2	1 Faculty	CHARLES	PORTER	charles.porter@csu.edu
<input checked="" type="checkbox"/>	Class	3	1 Faculty	CHARLES	PORTER	charles.porter@csu.edu
<input checked="" type="checkbox"/>	Fname	4	1 Faculty	CHARLES	PORTER	charles.porter@csu.edu
<input checked="" type="checkbox"/>	Lname	5	2 Faculty	DONALD	STEPHENS	donald.stephens@csu.edu
<input checked="" type="checkbox"/>	Email	6	2 Faculty	DONALD	STEPHENS	donald.stephens@csu.edu
<input checked="" type="checkbox"/>	Phone	7	2 Faculty	DONALD	STEPHENS	donald.stephens@csu.edu
<input checked="" type="checkbox"/>	Dept	8	2 Faculty	DONALD	STEPHENS	donald.stephens@csu.edu
<input checked="" type="checkbox"/>	ProjectID	9	2 Faculty	DONALD	STEPHENS	donald.stephens@csu.edu
<input checked="" type="checkbox"/>	StartDate	10	2 Faculty	DONALD	STEPHENS	donald.stephens@csu.edu
<input checked="" type="checkbox"/>	EndDate	11	3 Faculty	CRYSTAL	FLORES	crystal.flores@csu.edu
		12	3 Faculty	CRYSTAL	FLORES	crystal.flores@csu.edu
		13	3 Faculty	CRYSTAL	FLORES	crystal.flores@csu.edu
		14	3 Faculty	CRYSTAL	FLORES	crystal.flores@csu.edu
		15	4 Faculty	TERRY	OWENS	terry.owens@csu.edu
Property	Value	16	4 Faculty	TERRY	OWENS	terry.owens@csu.edu
Label		17	4 Faculty	TERRY	OWENS	terry.owens@csu.edu
Name		18	4 Faculty	TERRY	OWENS	terry.owens@csu.edu
Length		19	4 Faculty	TERRY	OWENS	terry.owens@csu.edu
Type		20	5 Faculty	TRACY	BARNES	tracy.barnes@csu.edu
Format		21	5 Faculty	TRACY	BARNES	tracy.barnes@csu.edu
Informat		22	5 Faculty	TRACY	BARNES	tracy.barnes@csu.edu
		23	5 Faculty	TRACY	BARNES	tracy.barnes@csu.edu
		24	6 Faculty	MATTHEW	WEST	matthew.west@csu.edu

Messages: 17 User: u62223361

31C

```
/* 31C */
```

```
DATA UnregisteredProj IncompletedProj CompletedProj;
  SET ITS;
  MERGE USERS (IN=User) PROJECTS(IN=Prj);
  BY UserID;
  IF ProjectID = . THEN OUTPUT UnregisteredProj;
  ELSE IF EndDate = . THEN OUTPUT IncompletedProj;
  ELSE OUTPUT CompletedProj;
RUN;
```

```
1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /* 31C */
70
71      DATA UnregisteredProj IncompletedProj CompletedProj;
72      SET ITS;
73      MERGE USERS (IN=User) PROJECTS(IN=Prj);
74      BY UserID;
75      IF ProjectID = . THEN OUTPUT UnregisteredProj;
76      ELSE IF EndDate = . THEN OUTPUT IncompletedProj;
77      ELSE OUTPUT CompletedProj;
78      RUN;

NOTE: There were 7273 observations read from the data set WORK.ITS.
NOTE: There were 1797 observations read from the data set WORK.USERS.
NOTE: There were 7266 observations read from the data set WORK.PROJECTS.
NOTE: The data set WORK.UNREGISTEREDPROJ has 7 observations and 10 variables.
NOTE: The data set WORK.INCOMPLETEDPROJ has 3139 observations and 10 variables.
NOTE: The data set WORK.COMPLETEDPROJ has 4127 observations and 10 variables.
NOTE: DATA statement used (Total process time):
      real time          0.00 seconds
      user cpu time     0.00 seconds
      system cpu time   0.01 seconds
      memory            4628.09k
      OS Memory         27320.00k
      Timestamp          04/27/2024 11:54:57 PM
      Step Count          149   Switch Count   6
      Page Faults        0
      Page Reclaims      786
      Page Swaps          0
      Voluntary Context Switches 35
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 2592

79
80      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
90
```

CODE LOG RESULTS OUTPUT DATA

Table: WORK.UNREGISTEREDPROJ | View: Column names | Filter: (none)

Columns Total rows: 7 Total columns: 10 Rows 1-7

	UserID	Class	Fname	Lname	Email
1	12	Faculty	PATRICIA	BUTLER	patricia.butler@csu.edu
2	43	Faculty	ANDREA	MARTINEZ	andrea.martinez@csu.edu
3	284	Faculty	SHAWN	HALL	shawn.hall@csu.edu
4	762	Faculty	REBECCA	GIBSON	rebecca.gibson@csu.edu
5	817	Faculty	TANYA	DANIELS	tanya.daniels@csu.edu
6	1367	Faculty	KEVIN	BARNES	kevin.barnes@csu.edu
7	1489	Student	STACY	BENNETT	stacy.bennett@csu.edu

Property Value

Label	
Name	
Length	
Type	
Format	
Informat	

HW6.sas HW7.sas HW8.sas HW9.sas

CODE LOG RESULTS OUTPUT DATA

Table: WORK.INCOMPLETEDPROJ | View: Column names Filter: (none)

Total rows: 3139 Total columns: 10

Rows 1-100

Columns

		UserID	Class	Fname	Lname	Email
<input checked="" type="checkbox"/>	Select all	1	Faculty	CHARLES	PORTER	charles.porter@csu.edu
<input checked="" type="checkbox"/>	UserID	2	Faculty	CHARLES	PORTER	charles.porter@csu.edu
<input checked="" type="checkbox"/>	Class	3	Faculty	DONALD	STEPHENS	donald.stephens@csu.edu
<input checked="" type="checkbox"/>	Fname	4	Faculty	DONALD	STEPHENS	donald.stephens@csu.edu
<input checked="" type="checkbox"/>	Lname	5	Faculty	CRYSTAL	FLORES	crystal.flores@csu.edu
<input checked="" type="checkbox"/>	Email	6	Faculty	CRYSTAL	FLORES	crystal.flores@csu.edu
<input checked="" type="checkbox"/>	Phone	7	Faculty	TERRY	OWENS	terry.owens@csu.edu
<input checked="" type="checkbox"/>	Dept	8	Faculty	TERRY	OWENS	terry.owens@csu.edu
<input checked="" type="checkbox"/>	ProjectID	9	Faculty	TERRY	OWENS	terry.owens@csu.edu
<input checked="" type="checkbox"/>	StartDate	10	Faculty	TRACY	BARNES	tracy.barnes@csu.edu
<input checked="" type="checkbox"/>	EndDate	11	Faculty	TRACY	BARNES	tracy.barnes@csu.edu
		12	Faculty	MATTHEW	WEST	matthew.west@csu.edu
		13	Faculty	MATTHEW	WEST	matthew.west@csu.edu
		14	Faculty	CHARLES	YOUNG	charles.young@csu.edu
		15	Faculty	CHARLES	YOUNG	charles.young@csu.edu
		16	Faculty	CHARLES	YOUNG	charles.young@csu.edu
		17	Faculty	TAMMY	BENNETT	tammy.bennett@csu.edu
		18	Faculty	TAMMY	BENNETT	tammy.bennett@csu.edu
		19	Faculty	TAMMY	BENNETT	tammy.bennett@csu.edu
		20	Faculty	TAMMY	BENNETT	tammy.bennett@csu.edu
		21	Faculty	BENJAMIN	WALLACE	benjamin.wallace@csu.edu
		22	Faculty	BENJAMIN	WALLACE	benjamin.wallace@csu.edu
		23	Faculty	JOSEPH	WALLACE	joseph.wallace@csu.edu
		24	Faculty	JUSTIN	MORGAN	justin.morgan@csu.edu

Property **Value**

HW6.sas HW7.sas HW8.sas HW9.sas

CODE LOG RESULTS OUTPUT DATA

Table: WORK.COMPLETEDPROJ | View: Column names Filter: (none)

Total rows: 4127 Total columns: 10

Rows 1-100

Columns

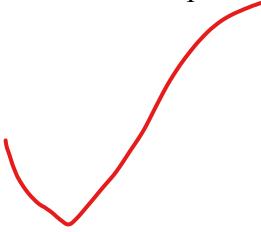
		UserID	Class	Fname	Lname	Email
<input checked="" type="checkbox"/>	Select all	1	Faculty	CHARLES	PORTER	charles.porter@csu.edu
<input checked="" type="checkbox"/>	UserID	2	Faculty	CHARLES	PORTER	charles.porter@csu.edu
<input checked="" type="checkbox"/>	Class	3	Faculty	DONALD	STEPHENS	donald.stephens@csu.edu
<input checked="" type="checkbox"/>	Fname	4	Faculty	DONALD	STEPHENS	donald.stephens@csu.edu
<input checked="" type="checkbox"/>	Lname	5	Faculty	DONALD	STEPHENS	donald.stephens@csu.edu
<input checked="" type="checkbox"/>	Email	6	Faculty	DONALD	STEPHENS	donald.stephens@csu.edu
<input checked="" type="checkbox"/>	Phone	7	Faculty	CRYSTAL	FLORES	crystal.flores@csu.edu
<input checked="" type="checkbox"/>	Dept	8	Faculty	CRYSTAL	FLORES	crystal.flores@csu.edu
<input checked="" type="checkbox"/>	ProjectID	9	Faculty	TERRY	OWENS	terry.owens@csu.edu
<input checked="" type="checkbox"/>	StartDate	10	Faculty	TERRY	OWENS	terry.owens@csu.edu
<input checked="" type="checkbox"/>	EndDate	11	Faculty	TRACY	BARNES	tracy.barnes@csu.edu
		12	Faculty	TRACY	BARNES	tracy.barnes@csu.edu
		13	Faculty	KEVIN	PRICE	kevin.price@csu.edu
		14	Faculty	KEVIN	PRICE	kevin.price@csu.edu
		15	Faculty	DANA	RAMIREZ	dana.ramirez@csu.edu
		16	Faculty	CHARLES	YOUNG	charles.young@csu.edu
		17	Faculty	JASON	PERRY	jason.perry@csu.edu
		18	Faculty	JASON	PERRY	jason.perry@csu.edu
		19	Faculty	JASON	PERRY	jason.perry@csu.edu
		20	Faculty	JASON	PERRY	jason.perry@csu.edu
		21	Faculty	NICOLE	HALL	nicole.hall@csu.edu
		22	Faculty	NICOLE	HALL	nicole.hall@csu.edu
		23	Faculty	BENJAMIN	WALLACE	benjamin.wallace@csu.edu
		24	Faculty	BENJAMIN	WALLACE	benjamin.wallace@csu.edu

Property **Value**

31D

```
/* 31D */
```

```
DATA UnregisteredProj (Drop= Total) IncompletedProj (Drop= Total) CompletedProj;  
/*      SET ITS; */  
MERGE USERS (IN=User) PROJECTS(IN=Prj);  
BY UserID;  
IF FIRST.UserID then Total=0;  
      This line can be replaced by IF User = 1 AND Prj  
      = 0 THEN OUTPUT unregisteredProj;  
IF ProjectID = . THEN OUTPUT UnregisteredProj;  
ELSE IF EndDate = . THEN OUTPUT IncompletedProj;  
ELSE DO;  
      Total + 1;  
      OUTPUT CompletedProj;  
END;  
RUN;
```



```
1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /* 31D */
70
71      DATA UnregisteredProj (Drop= Total) IncompletedProj (Drop= Total) CompletedProj;
72      /* SET ITS; */
73      MERGE  USERS (IN=User) PROJECTS(IN=Prj);
74      BY UserID;
75      IF FIRST.UserID then Total=0;
76
77      IF ProjectID = . THEN OUTPUT UnregisteredProj;
78      ELSE IF EndDate = . THEN OUTPUT IncompletedProj;
79      ELSE DO;
80          Total + 1;
81          OUTPUT CompletedProj;
82      END;
83      RUN;
```

NOTE: There were 1797 observations read from the data set WORK.USERS.
NOTE: There were 7266 observations read from the data set WORK.PROJECTS.
NOTE: The data set WORK.UNREGISTEREDPROJ has 7 observations and 10 variables.
NOTE: The data set WORK.INCOMPLETEDPROJ has 3139 observations and 10 variables.
NOTE: The data set WORK.COMPLETEDPROJ has 4127 observations and 11 variables.
NOTE: DATA statement used (Total process time):
real time 0.00 seconds
user cpu time 0.01 seconds
system cpu time 0.01 seconds
memory 3450.00k
OS Memory 26036.00k
Timestamp 04/27/2024 11:56:11 PM
Step Count 167 Switch Count 6
Page Faults 0
Page Reclaims 566
Page Swaps 0
Voluntary Context Switches 34
Involuntary Context Switches 0
Block Input Operations 0
Block Output Operations 2840

```
84
85      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
95
```

HW6.sas × HW7.sas × HW8.sas × HW9.sas ×

CODE LOG RESULTS OUTPUT DATA

Table: WORK.COMPLETEDPROJ View: Column names Filter: (none)

Columns Total rows: 4127 Total columns: 11

	Phone	Dept	ProjectID	StartDate	EndDate	Total
<input checked="" type="checkbox"/> Select all	555-8511	AERO	3	21539	21684	1
<input checked="" type="checkbox"/> UserID	555-8511	AERO	4	21403	21415	2
<input checked="" type="checkbox"/> Class	555-6884	CHEM	2	21282	21355	1
<input checked="" type="checkbox"/> Fname	555-6884	CHEM	4	21339	21437	2
<input checked="" type="checkbox"/> Lname	555-6884	CHEM	5	21397	21452	3
<input checked="" type="checkbox"/> Email	555-6884	CHEM	6	21363	21494	4
<input checked="" type="checkbox"/> Phone	555-7053	AERO	1	21481	21534	1
<input checked="" type="checkbox"/> Dept	555-7053	AERO	3	21236	21303	2
<input checked="" type="checkbox"/> ProjectID	555-5733	IME	1	21283	21447	1
<input checked="" type="checkbox"/> StartDate	555-5733	IME	5	21392	21507	2
<input checked="" type="checkbox"/> EndDate	555-8293	MATE	2	21222	21271	1
<input checked="" type="checkbox"/> Total	555-8293	MATE	4	21310	21383	2
	555-6347	CSC	1	21386	21468	1
	555-6347	CSC	2	21424	21471	2
	555-1703	STAT	1	21505	21595	1
	555-7755	AERO	3	21234	21376	1
	555-1213	STAT	1	21368	21439	1
	555-1213	STAT	2	21291	21301	2
	555-1213	STAT	3	21478	21488	3
	555-1213	STAT	4	21365	21442	4
	555-1551	ME	1	21290	21450	1
	555-1551	ME	2	21460	21542	2
	555-9094	BIOCHEM	2	21479	21576	1
	555-9094	BIOCHEM	3	21228	21284	2

Rows 1-100

Property Value

Label	
Name	
Length	
Type	
Format	
Informat	

Messages: 21 User: u62223361

31E

/* 31E */

PROC SQL;

```

CREATE TABLE CompletedProj AS
  SELECT *, COUNT(P.UserID) AS Total
    FROM USERS AS U, PROJECTS AS P
   WHERE U.UserID = P.UserID
     AND P.ProjectID IS NOT NULL
     AND EndDate IS NOT NULL
 GROUP BY U.UserID;

```

QUIT;

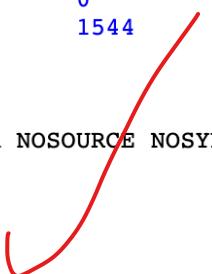
```

1      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
68
69      /* 31E */
70      PROC SQL;
71      CREATE TABLE CompletedProj AS
72          SELECT *, COUNT(P.UserID) AS Total
73          FROM USERS AS U, PROJECTS AS P
74          WHERE U.UserID = P.UserID
75          AND P.ProjectID IS NOT NULL
76          AND EndDate IS NOT NULL
77          GROUP BY U.UserID;
NOTE: The query requires remerging summary statistics back with the original data.
WARNING: Variable UserID already exists on file WORK.COMPLETEDPROJ.
NOTE: Table WORK.COMPLETEDPROJ created, with 4127 rows and 11 columns.

78      QUIT;
NOTE: PROCEDURE SQL used (Total process time):
      real time          0.00 seconds
      user cpu time      0.00 seconds
      system cpu time    0.00 seconds
      memory             6206.31k
      OS Memory          28844.00k
      Timestamp           04/27/2024 11:57:03 PM
      Step Count          173   Switch Count  5
      Page Faults         0
      Page Reclaims       309
      Page Swaps          0
      Voluntary Context Switches 17
      Involuntary Context Switches 0
      Block Input Operations 0
      Block Output Operations 1544

79
80      OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
90

```



HW6.sas HW7.sas HW8.sas HW9.sas

CODE LOG RESULTS OUTPUT DATA

Table: WORK.COMPLETEDPROJ | View: Column names | Filter: (none)

Columns

<input checked="" type="checkbox"/> Select all		Dept	ProjectID	StartDate	EndDate	Total
<input checked="" type="checkbox"/>	UserID	AERO	3	21539	21684	2
<input checked="" type="checkbox"/>	Class	AERO	4	21403	21415	2
<input checked="" type="checkbox"/>	Fname	CHEM	2	21282	21355	4
<input checked="" type="checkbox"/>	Lname	CHEM	4	21339	21437	4
<input checked="" type="checkbox"/>	Email	CHEM	5	21397	21452	4
<input checked="" type="checkbox"/>	Phone	CHEM	6	21363	21494	4
<input checked="" type="checkbox"/>	Dept	AERO	1	21481	21534	2
<input checked="" type="checkbox"/>	ProjectID	AERO	3	21236	21303	2
<input checked="" type="checkbox"/>	StartDate	IME	1	21283	21447	2
<input checked="" type="checkbox"/>	EndDate	IME	5	21392	21507	2
<input checked="" type="checkbox"/>	Total	MATE	2	21222	21271	2
<input checked="" type="checkbox"/>		MATE	4	21310	21383	2
<input checked="" type="checkbox"/>		CSC	1	21386	21468	2
<input checked="" type="checkbox"/>		CSC	2	21424	21471	2
<input checked="" type="checkbox"/>	Label	STAT	1	21505	21595	1
<input checked="" type="checkbox"/>	Name	AERO	3	21234	21376	1
<input checked="" type="checkbox"/>	Length	STAT	1	21368	21439	4
<input checked="" type="checkbox"/>	Type	STAT	2	21291	21301	4
<input checked="" type="checkbox"/>	Format	STAT	3	21478	21488	4
<input checked="" type="checkbox"/>	Informat	STAT	4	21365	21442	4
	

Property Value

Property	Value	Dept	ProjectID	StartDate	EndDate	Total
Label	03 STAT	AERO	3	21505	21595	1
Name	55 AERO	STAT	1	21234	21376	1
Length	13 STAT	STAT	3	21368	21439	4
Type	13 STAT	STAT	1	21291	21301	4
Format	13 STAT	STAT	2	21478	21488	4
Informat	13 STAT	STAT	4	21365	21442	4

Rows 1-100

Messages: 22 User: u62223361

31F

```
/* 31F */
/* CompletedProj: 4127 observations, 11 variables*/
/* UnregisteredProj: 7 observations, 10 variables*/
/* IncompletedProj: 3139 observations, 10 variables*/
```