Program Summary - Project.sas

Execution Environment

Author:	sasdemo
File:	/folders/myfolders/Project/Project.sas
SAS Platform:	Linux LIN X64 2.6.32-696.20.1.el6.x86_64
SAS Host:	LOCALHOST
SAS Version:	9.04.01M5P09132017
SAS Locale:	en_US
Submission Time:	12/3/2018, 8:07:14 PM
Browser Host:	10.0.2.2
User Agent:	Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/70.0.3538.110 Safari/537.36
Application Server:	LOCALHOST.LOCALDOMAIN

Code: Project.sas

```
/*Final Project
*Author Jonathan Wilson
*Date 11/7/2018
*/

options leftmargin=.5in rightmargin=1in orientation=landscape nocenter;
ods pdf file="/folders/myfolders/Project/FinalProjectSummary.pdf";

/*Read in data sets*/
%let path=/folders/myfolders/Project;
libname project "&path";

/*Creating the domains data set*/
data domainsA;
    infile "&path/Domains FormA.csv" dlm=',' firstobs=2 dsd;
    input ItemId Domain :$255. DomainNum QuestionNum;/*Domain :$255. use this to capture a long string of chars*/
run;

data domainsB;
    infile "&path/Domains FormB.csv" dlm=',' firstobs=2 dsd;
    input ItemId Domain :$255. DomainNum QuestionNum;/*Domain :$255. use this to capture a long string of chars*/
run;

/*Creating the answers data sets*/
data FormAanswers;
    infile "&path/FormA.csv" dlm=',' obs=1;
    input qID $ (Q1-Q150) ($);
run;

data FormBanswers;
    infile "&path/FormB.csv" dlm=',' obs=1;
    input qID $ (Q1-Q150) ($);
run;

/*Creating the tests data sets*/
data FormAtests;
    infile "&path/FormA.csv" dlm=',' firstobs=2 dsd;
    input sID (Q1-Q150) ($);/*Use columns(array) to count the number of columns in Excel. (Q1-Q150) ($) is a char range*/
run;

data FormBtests;
    infile "&path/FormB.csv" dlm=',' firstobs=2 dsd;
    input sID (Q1-Q150) ($);/*Use columns(array) to count the number of columns in Excel. (Q1-Q150) ($) is a char range*/
run;

/*Step 1*/
/*Calculate the answers for each test: Form A*/
data resultsA;
    set FormAanswers FormAtests;

    array tests(150) $1 Q1-Q150;
    array key(150) $1 k1-k150;
    array match(150) m1-m150;

    retain k1-k150;
```

```
/*  populate key array */
    if qID = "AAAAKEY" then do;
        do i = 1 to 150;
            key(i) = tests(i);
        end;
    end;

    else do;
        do QuestionNum= 1 to 150;
            if key(QuestionNum) ne tests(QuestionNum) then match(QuestionNum) = 0;
            else match(QuestionNum) = 1;
            matches = match(QuestionNum);
            output;
        end;
    end;
    keep matches QuestionNum sID;
run;

/*Calculate the answers for each test: Form B*/
data resultsB;
    set FormBanswers FormBtests;

    array tests(150) $1 Q1-Q150;
    array key(150) $1 k1-k150;
    array match(150) m1-m150;

    retain k1-k150;

/*  populate key array */
    if qID = "BBBBKEY" then do;
        do i = 1 to 150;
            key(i) = tests(i);
        end;
    end;

    else do;
        do QuestionNum= 1 to 150;
            if key(QuestionNum) ne tests(QuestionNum) then match(QuestionNum) = 0;
            else match(QuestionNum) = 1;
            matches = match(QuestionNum);
            output;
        end;
    end;
    keep matches QuestionNum sID;
run;

/*Merge domains and results STEP 2*/
/*Set A*/
/*Sort by QuestionNum */
proc sort data=resultsA out=resultsA;
    by QuestionNum;
run;

proc sort data=domainsA out=domainsA;
    by QuestionNum;
run;
data domainsMergeResultsA;
    merge resultsA domainsA;
    by QuestionNum;
run;

/*Set B*/
/*Sort by QuestionNum */
proc sort data=resultsB out=resultsB;
    by QuestionNum;
run;

proc sort data=domainsB out=domainsB;
    by QuestionNum;
run;
data domainsMergeResultsB;
    merge resultsB domainsB;
    by QuestionNum;
run;
```

```
/*Combine merged sets STEP 3*/
data combinedMerge;
    set domainsMergeResultsA domainsMergeResultsB;
/*  by sID; */
    remain = mod(sID, 2);
        if remain=0 then
            Form='B';
        else Form='A';
    drop remain;
run;

/*STEP 4*/
/*Aggregations on students*/

proc means data=combinedMerge sum mean nonobs maxdec=0 noprint;
/*  by sID; */
    class DomainNum sID;
    var matches;
    ID Form;
    output out=studentResults (drop=_TYPE_ _FREQ_)
        mean=percent sum=score;
run;

/*STEP 5 sort by Students*/
proc sort data=studentResults out=sortedStudentResults;
    by sID;
    where sID ne .;/*take out sIDs with no values*/
run;

/*STEP 6 Transformation and Section A*/
data transformStudents;
    set sortedStudentResults;

    retain os op ds1 ds2 ds3 ds4 ds5 dp1 dp2 dp3 dp4 dp5;
    array scores_array(*) os op ds1 dp1 ds2 dp2 ds3 dp3 ds4 dp4 ds5 dp5;
    by sID;

    if first.sID then i=0;

    i+1;
    scores_array(i) = score;
    i+1;
    scores_array(i) = percent;

    if last.sID then output;

    drop percent score i domainNum;
    label   os = "Overall Score"
            op = "Overall Percentage"
            ds1 = "Domain 1 Score"
            ds2 = "Domain 2 Score"
            ds3 = "Domain 3 Score"
            ds4 = "Domain 4 Score"
            ds5 = "Domain 5 Score"
            dp1 = "Domain 1 Percentage"
            dp2 = "Domain 2 Percentage"
            dp3 = "Domain 3 Percentage"
            dp4 = "Domain 4 Percentage"
            dp5 = "Domain 5 Percentage"
            sID = "Student";
run;

footnote1 'Final Project STAT 124';

/* Student Scores Sorted by Student ID */
proc print data=transformStudents label noobs;
    format  op percent7.1
            dp1 percent7.1
            dp2 percent7.1
            dp3 percent7.1
            dp4 percent7.1
            dp5 percent7.1;
    var sID Form os op ds1 ds2 ds3 ds4 ds5 dp1 dp2 dp3 dp4 dp5;
    title1 'Section A - Student Scores Sorted by Student ID';

run;
```

```
proc sort data=transformStudents out=sortedHighestToLowestScores;
    by descending os;
run;

/* Student Scores Sorted Highest to Lowest Overall Score */
proc print data=sortedHighestToLowestScores label noobs;
    format  op percent7.1
            dp1 percent7.1
            dp2 percent7.1
            dp3 percent7.1
            dp4 percent7.1
            dp5 percent7.1;
    var sID Form op os dp1 dp2 dp3 dp4 dp5 ds1 ds2 ds3 ds4 ds5;
    title1 'Section A - Student Scores Sorted Highest to Lowest Overall Score';

run;

data boxplot;
    set studentResults;
    keep DomainNum percent;
    where DomainNum ne .;
run;

/* Box Plot */
PROC SGPLOT  DATA = boxplot;
    label   percent="Student Percentages"
            DomainNum="Domain";
    format percent percent7.1;
   VBOX percent
   / category = DomainNum;

   title 'Section A: Distribution of Student Percents by Domain Number';
RUN;


/*STEP 7*/
proc means data=combinedMerge mean nonobs nway maxdec=0 noprint;
    class QuestionNum Form;
    var matches;
    output out=questionAggs (drop=_TYPE_ _FREQ_)
        mean=percent;
run;

proc sort data=questionAggs out=questionAggsSorted;
    by Form QuestionNum;
run;

proc print data=questionAggsSorted label noobs;
    format percent percent7.1;
    label percent="Question Percentage" QuestionNum="Question Number";
    var Form QuestionNum percent;
    title1 'Section B: Question Analysis Sorted by Exam Form and Question Number';
run;

proc sort data=questionAggs out=questionAggsSortedByQuestionPer;
    by descending percent;
run;

proc print data=questionAggsSortedByQuestionPer label noobs;
    format percent percent7.1;
    label percent="Question Percentage" QuestionNum="Question Number";
    var percent Form QuestionNum;
    title1 'Section B: Question Analysis Sorted by Question Percentage';
run;
ods pdf close;
```

Log: Project.sas

Notes (97)

```
1          OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
NOTE: ODS statements in the SAS Studio environment may disable some output features.
73
74         /*Final Project
```

```
75         *Author Jonathan Wilson
76         *Date 11/7/2018
77         */
78
79         options leftmargin=.5in rightmargin=1in orientation=landscape nocenter;
80         ods pdf file="/folders/myfolders/Project/FinalProjectSummary.pdf";
NOTE: Writing ODS PDF output to DISK destination "/folders/myfolders/Project/FinalProjectSummary.pdf", printer "PDF".
81
82         /*Read in data sets*/
83         %let path=/folders/myfolders/Project;
84         libname project "&path";
NOTE: Libref PROJECT was successfully assigned as follows:
      Engine:        V9
      Physical Name: /folders/myfolders/Project
85
86         /*Creating the domains data set*/
87         data domainsA;
88         infile "&path/Domains FormA.csv" dlm=',' firstobs=2 dsd;
89         input ItemId Domain :$255. DomainNum QuestionNum;/*Domain :$255. use this to capture a long string of chars*/
90         run;

NOTE: The infile "/folders/myfolders/Project/Domains FormA.csv" is:
      Filename=/folders/myfolders/Project/Domains FormA.csv,
      Owner Name=root,Group Name=vboxsf,
      Access Permission=-rwxrwx---,
      Last Modified=25Nov2018:15:49:08,
      File Size (bytes)=7047

NOTE: 150 records were read from the infile "/folders/myfolders/Project/Domains FormA.csv".
      The minimum record length was 40.
      The maximum record length was 62.
NOTE: The data set WORK.DOMAINSA has 150 observations and 4 variables.
NOTE: DATA statement used (Total process time):
      real time           0.02 seconds
      cpu time            0.00 seconds


91
92         data domainsB;
93         infile "&path/Domains FormB.csv" dlm=',' firstobs=2 dsd;
94         input ItemId Domain :$255. DomainNum QuestionNum;/*Domain :$255. use this to capture a long string of chars*/
95         run;

NOTE: The infile "/folders/myfolders/Project/Domains FormB.csv" is:
      Filename=/folders/myfolders/Project/Domains FormB.csv,
      Owner Name=root,Group Name=vboxsf,
      Access Permission=-rwxrwx---,
      Last Modified=25Nov2018:15:49:08,
      File Size (bytes)=7047

NOTE: 150 records were read from the infile "/folders/myfolders/Project/Domains FormB.csv".
      The minimum record length was 40.
      The maximum record length was 62.
NOTE: The data set WORK.DOMAINSB has 150 observations and 4 variables.
NOTE: DATA statement used (Total process time):
      real time           0.02 seconds
      cpu time            0.02 seconds


96
97         /*Creating the answers data sets*/
98         data FormAanswers;
99         infile "&path/FormA.csv" dlm=',' obs=1;
100        input qID $ (Q1-Q150) ($);
101        run;

NOTE: The infile "/folders/myfolders/Project/FormA.csv" is:
      Filename=/folders/myfolders/Project/FormA.csv,
      Owner Name=root,Group Name=vboxsf,
      Access Permission=-rwxrwx---,
      Last Modified=25Nov2018:15:08:52,
      File Size (bytes)=15503

NOTE: 1 record was read from the infile "/folders/myfolders/Project/FormA.csv".
      The minimum record length was 307.
      The maximum record length was 307.
NOTE: The data set WORK.FORMAANSWERS has 1 observations and 151 variables.
NOTE: DATA statement used (Total process time):
      real time           0.01 seconds
      cpu time            0.01 seconds


102
103        data FormBanswers;
104        infile "&path/FormB.csv" dlm=',' obs=1;
```

```
105        input qID $ (Q1-Q150) ($);
106        run;

NOTE: The infile "/folders/myfolders/Project/FormB.csv" is:
      Filename=/folders/myfolders/Project/FormB.csv,
      Owner Name=root,Group Name=vboxsf,
      Access Permission=-rwxrwx---,
      Last Modified=25Nov2018:15:08:52,
      File Size (bytes)=15201

NOTE: 1 record was read from the infile "/folders/myfolders/Project/FormB.csv".
      The minimum record length was 307.
      The maximum record length was 307.
NOTE: The data set WORK.FORMBANSWERS has 1 observations and 151 variables.
NOTE: DATA statement used (Total process time):
      real time           0.01 seconds
      cpu time            0.01 seconds


107
108        /*Creating the tests data sets*/
109        data FormAtests;
110        infile "&path/FormA.csv" dlm=',' firstobs=2 dsd;
111        input sID (Q1-Q150) ($);/*Use columns(array) to count the number of columns in Excel. (Q1-Q150) ($) is a char range*/
112        run;

NOTE: The infile "/folders/myfolders/Project/FormA.csv" is:
      Filename=/folders/myfolders/Project/FormA.csv,
      Owner Name=root,Group Name=vboxsf,
      Access Permission=-rwxrwx---,
      Last Modified=25Nov2018:15:08:52,
      File Size (bytes)=15503

NOTE: 50 records were read from the infile "/folders/myfolders/Project/FormA.csv".
      The minimum record length was 301.
      The maximum record length was 302.
NOTE: The data set WORK.FORMATESTS has 50 observations and 151 variables.
NOTE: DATA statement used (Total process time):
      real time           0.01 seconds
      cpu time            0.02 seconds


113
114        data FormBtests;
115        infile "&path/FormB.csv" dlm=',' firstobs=2 dsd;
116        input sID (Q1-Q150) ($);/*Use columns(array) to count the number of columns in Excel. (Q1-Q150) ($) is a char range*/
117        run;

NOTE: The infile "/folders/myfolders/Project/FormB.csv" is:
      Filename=/folders/myfolders/Project/FormB.csv,
      Owner Name=root,Group Name=vboxsf,
      Access Permission=-rwxrwx---,
      Last Modified=25Nov2018:15:08:52,
      File Size (bytes)=15201

NOTE: 49 records were read from the infile "/folders/myfolders/Project/FormB.csv".
      The minimum record length was 301.
      The maximum record length was 303.
NOTE: The data set WORK.FORMBTESTS has 49 observations and 151 variables.
NOTE: DATA statement used (Total process time):
      real time           0.01 seconds
      cpu time            0.01 seconds


118
119        /*Step 1*/
120        /*Calculate the answers for each test: Form A*/
121        data resultsA;
122        set FormAanswers FormAtests;
123
124        array tests(150) $1 Q1-Q150;
125        array key(150) $1 k1-k150;
126        array match(150) m1-m150;
127
128        retain k1-k150;
129
130        /* populate key array */
131        if qID = "AAAAKEY" then do;
132        do i = 1 to 150;
133        key(i) = tests(i);
134        end;
135        end;
136
137        else do;
138        do QuestionNum= 1 to 150;
```

```
139        if key(QuestionNum) ne tests(QuestionNum) then match(QuestionNum) = 0;
140        else match(QuestionNum) = 1;
141        matches = match(QuestionNum);
142        output;
143        end;
144        end;
145        keep matches QuestionNum sID;
146        run;

NOTE: There were 1 observations read from the data set WORK.FORMAANSWERS.
NOTE: There were 50 observations read from the data set WORK.FORMATESTS.
NOTE: The data set WORK.RESULTSA has 7500 observations and 3 variables.
NOTE: DATA statement used (Total process time):
      real time           0.01 seconds
      cpu time            0.02 seconds


147
148        /*Calculate the answers for each test: Form B*/
149        data resultsB;
150        set FormBanswers FormBtests;
151
152        array tests(150) $1 Q1-Q150;
153        array key(150) $1 k1-k150;
154        array match(150) m1-m150;
155
156        retain k1-k150;
157
158        /* populate key array */
159        if qID = "BBBBKEY" then do;
160        do i = 1 to 150;
161        key(i) = tests(i);
162        end;
163        end;
164
165        else do;
166        do QuestionNum= 1 to 150;
167        if key(QuestionNum) ne tests(QuestionNum) then match(QuestionNum) = 0;
168        else match(QuestionNum) = 1;
169        matches = match(QuestionNum);
170        output;
171        end;
172        end;
173        keep matches QuestionNum sID;
174        run;

NOTE: There were 1 observations read from the data set WORK.FORMBANSWERS.
NOTE: There were 49 observations read from the data set WORK.FORMBTESTS.
NOTE: The data set WORK.RESULTSB has 7350 observations and 3 variables.
NOTE: DATA statement used (Total process time):
      real time           0.02 seconds
      cpu time            0.02 seconds


175
176        /*Merge domains and results STEP 2*/
177        /*Set A*/
178        /*Sort by QuestionNum */
179        proc sort data=resultsA out=resultsA;
180        by QuestionNum;
181        run;

NOTE: There were 7500 observations read from the data set WORK.RESULTSA.
NOTE: The data set WORK.RESULTSA has 7500 observations and 3 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time           0.01 seconds
      cpu time            0.02 seconds


182
183        proc sort data=domainsA out=domainsA;
184        by QuestionNum;
185        run;

NOTE: There were 150 observations read from the data set WORK.DOMAINSA.
NOTE: The data set WORK.DOMAINSA has 150 observations and 4 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time           0.00 seconds
      cpu time            0.01 seconds


186        data domainsMergeResultsA;
187        merge resultsA domainsA;
188        by QuestionNum;
189        run;
```

```
NOTE: There were 7500 observations read from the data set WORK.RESULTSA.
NOTE: There were 150 observations read from the data set WORK.DOMAINSA.
NOTE: The data set WORK.DOMAINSMERGERESULTSA has 7500 observations and 6 variables.
NOTE: DATA statement used (Total process time):
      real time           0.03 seconds
      cpu time            0.02 seconds


190
191        /*Set B*/
192        /*Sort by QuestionNum */
193        proc sort data=resultsB out=resultsB;
194        by QuestionNum;
195        run;

NOTE: There were 7350 observations read from the data set WORK.RESULTSB.
NOTE: The data set WORK.RESULTSB has 7350 observations and 3 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time           0.02 seconds
      cpu time            0.01 seconds


196
197        proc sort data=domainsB out=domainsB;
198        by QuestionNum;
199        run;

NOTE: There were 150 observations read from the data set WORK.DOMAINSB.
NOTE: The data set WORK.DOMAINSB has 150 observations and 4 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time           0.00 seconds
      cpu time            0.01 seconds


200        data domainsMergeResultsB;
201        merge resultsB domainsB;
202        by QuestionNum;
203        run;

NOTE: There were 7350 observations read from the data set WORK.RESULTSB.
NOTE: There were 150 observations read from the data set WORK.DOMAINSB.
NOTE: The data set WORK.DOMAINSMERGERESULTSB has 7350 observations and 6 variables.
NOTE: DATA statement used (Total process time):
      real time           0.02 seconds
      cpu time            0.02 seconds


204
205        /*Combine merged sets STEP 3*/
206        data combinedMerge;
207        set domainsMergeResultsA domainsMergeResultsB;
208        /* by sID; */
209        remain = mod(sID, 2);
210                if remain=0 then
211                Form='B';
212                else Form='A';
213            drop remain;
214        run;

NOTE: There were 7500 observations read from the data set WORK.DOMAINSMERGERESULTSA.
NOTE: There were 7350 observations read from the data set WORK.DOMAINSMERGERESULTSB.
NOTE: The data set WORK.COMBINEDMERGE has 14850 observations and 7 variables.
NOTE: DATA statement used (Total process time):
      real time           0.04 seconds
      cpu time            0.03 seconds


215
216        /*STEP 4*/
217        /*Aggregations on students*/
218
219        proc means data=combinedMerge sum mean nonobs maxdec=0 noprint;
220        /* by sID; */
221        class DomainNum sID;
222        var matches;
223           ID Form;
224        output out=studentResults (drop=_TYPE_ _FREQ_)
225        mean=percent sum=score;
226        run;

NOTE: There were 14850 observations read from the data set WORK.COMBINEDMERGE.
NOTE: The data set WORK.STUDENTRESULTS has 600 observations and 5 variables.
NOTE: PROCEDURE MEANS used (Total process time):
      real time           0.03 seconds
```

```
      cpu time            0.04 seconds


227
228        /*STEP 5 sort by Students*/
229        proc sort data=studentResults out=sortedStudentResults;
230        by sID;
231        where sID ne .;/*take out sIDs with no values*/
232        run;

NOTE: There were 594 observations read from the data set WORK.STUDENTRESULTS.
      WHERE sID not = .;
NOTE: The data set WORK.SORTEDSTUDENTRESULTS has 594 observations and 5 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time           0.00 seconds
      cpu time            0.01 seconds


233
234        /*STEP 6 Transformation and Section A*/
235        data transformStudents;
236        set sortedStudentResults;
237
238        retain os op ds1 ds2 ds3 ds4 ds5 dp1 dp2 dp3 dp4 dp5;
239        array scores_array(*) os op ds1 dp1 ds2 dp2 ds3 dp3 ds4 dp4 ds5 dp5;
240        by sID;
241
242        if first.sID then i=0;
243
244        i+1;
245        scores_array(i) = score;
246        i+1;
247        scores_array(i) = percent;
248
249        if last.sID then output;
250
251        drop percent score i domainNum;
252        label os = "Overall Score"
253        op = "Overall Percentage"
254        ds1 = "Domain 1 Score"
255        ds2 = "Domain 2 Score"
256        ds3 = "Domain 3 Score"
257        ds4 = "Domain 4 Score"
258        ds5 = "Domain 5 Score"
259        dp1 = "Domain 1 Percentage"
260        dp2 = "Domain 2 Percentage"
261        dp3 = "Domain 3 Percentage"
262        dp4 = "Domain 4 Percentage"
263        dp5 = "Domain 5 Percentage"
264        sID = "Student";
265        run;

NOTE: There were 594 observations read from the data set WORK.SORTEDSTUDENTRESULTS.
NOTE: The data set WORK.TRANSFORMSTUDENTS has 99 observations and 14 variables.
NOTE: DATA statement used (Total process time):
      real time           0.01 seconds
      cpu time            0.01 seconds


266
267        footnote1 'Final Project STAT 124';
268
269        /* Student Scores Sorted by Student ID */
270        proc print data=transformStudents label noobs;
271        format op percent7.1
272        dp1 percent7.1
273        dp2 percent7.1
274        dp3 percent7.1
275        dp4 percent7.1
276        dp5 percent7.1;
277        var sID Form os op ds1 ds2 ds3 ds4 ds5 dp1 dp2 dp3 dp4 dp5;
278        title1 'Section A - Student Scores Sorted by Student ID';
279
280        run;

NOTE: There were 99 observations read from the data set WORK.TRANSFORMSTUDENTS.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.84 seconds
      cpu time            0.83 seconds


281
282        proc sort data=transformStudents out=sortedHighestToLowestScores;
283        by descending os;
284        run;
```

```
NOTE: There were 99 observations read from the data set WORK.TRANSFORMSTUDENTS.
NOTE: The data set WORK.SORTEDHIGHESTTOLOWESTSCORES has 99 observations and 14 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time           0.00 seconds
      cpu time            0.01 seconds


285
286        /* Student Scores Sorted Highest to Lowest Overall Score */
287        proc print data=sortedHighestToLowestScores label noobs;
288        format op percent7.1
289        dp1 percent7.1
290        dp2 percent7.1
291        dp3 percent7.1
292        dp4 percent7.1
293        dp5 percent7.1;
294        var sID Form op os dp1 dp2 dp3 dp4 dp5 ds1 ds2 ds3 ds4 ds5;
295        title1 'Section A - Student Scores Sorted Highest to Lowest Overall Score';
296
297        run;

NOTE: There were 99 observations read from the data set WORK.SORTEDHIGHESTTOLOWESTSCORES.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.93 seconds
      cpu time            0.94 seconds


298
299        data boxplot;
300        set studentResults;
301        keep DomainNum percent;
302        where DomainNum ne .;
303        run;

NOTE: There were 500 observations read from the data set WORK.STUDENTRESULTS.
      WHERE DomainNum not = .;
NOTE: The data set WORK.BOXPLOT has 500 observations and 2 variables.
NOTE: DATA statement used (Total process time):
      real time           0.00 seconds
      cpu time            0.01 seconds


304
305        /* Box Plot */
306        PROC SGPLOT  DATA = boxplot;
307        label percent="Student Percentages"
308        DomainNum="Domain";
309        format percent percent7.1;
310           VBOX percent
311           / category = DomainNum;
312
313           title 'Section A: Distribution of Student Percents by Domain Number';
314        RUN;

NOTE: Since no format is assigned, the numeric category variable will use the default of BEST6.
NOTE: PROCEDURE SGPLOT used (Total process time):
      real time           0.71 seconds
      cpu time            0.42 seconds

NOTE: There were 500 observations read from the data set WORK.BOXPLOT.

315
316
317        /*STEP 7*/
318        proc means data=combinedMerge mean nonobs nway maxdec=0 noprint;
319        class QuestionNum Form;
320        var matches;
321        output out=questionAggs (drop=_TYPE_ _FREQ_)
322        mean=percent;
323        run;

NOTE: There were 14850 observations read from the data set WORK.COMBINEDMERGE.
NOTE: The data set WORK.QUESTIONAGGS has 300 observations and 3 variables.
NOTE: PROCEDURE MEANS used (Total process time):
      real time           0.03 seconds
      cpu time            0.03 seconds


324
325        proc sort data=questionAggs out=questionAggsSorted;
326        by Form QuestionNum;
327        run;

NOTE: There were 300 observations read from the data set WORK.QUESTIONAGGS.
```

```
NOTE: The data set WORK.QUESTIONAGGSSORTED has 300 observations and 3 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time           0.00 seconds
      cpu time            0.01 seconds


328
329        proc print data=questionAggsSorted label noobs;
330        format percent percent7.1;
331        label percent="Question Percentage" QuestionNum="Question Number";
332        var Form QuestionNum percent;
333        title1 'Section B: Question Analysis Sorted by Exam Form and Question Number';
334        run;

NOTE: There were 300 observations read from the data set WORK.QUESTIONAGGSSORTED.
NOTE: At least one W.D format was too small for the number to be printed. The decimal may be shifted by the "BEST" format.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.75 seconds
      cpu time            0.75 seconds


335
336        proc sort data=questionAggs out=questionAggsSortedByQuestionPer;
337        by descending percent;
338        run;

NOTE: There were 300 observations read from the data set WORK.QUESTIONAGGS.
NOTE: The data set WORK.QUESTIONAGGSSORTEDBYQUESTIONPER has 300 observations and 3 variables.
NOTE: PROCEDURE SORT used (Total process time):
      real time           0.00 seconds
      cpu time            0.01 seconds


339
340        proc print data=questionAggsSortedByQuestionPer label noobs;
341        format percent percent7.1;
342        label percent="Question Percentage" QuestionNum="Question Number";
343        var percent Form QuestionNum;
344        title1 'Section B: Question Analysis Sorted by Question Percentage';
345        run;

NOTE: There were 300 observations read from the data set WORK.QUESTIONAGGSSORTEDBYQUESTIONPER.
NOTE: At least one W.D format was too small for the number to be printed. The decimal may be shifted by the "BEST" format.
NOTE: PROCEDURE PRINT used (Total process time):
      real time           0.66 seconds
      cpu time            0.65 seconds


346        ods pdf close;
NOTE: ODS PDF printed 33 pages to /folders/myfolders/Project/FinalProjectSummary.pdf.
347
348        OPTIONS NONOTES NOSTIMER NOSOURCE NOSYNTAXCHECK;
361
```

Results: Project.sas

Section A - Student Scores Sorted by Student ID

Student	Form	Overall Score	Overall Percentage	Domain 1 Score	Domain 2 Score	Domain 3 Score	Domain 4 Score	Domain 5 Score	Domain 1 Percentage	Domain 2 Percentage	Domain 3 Percentage	Domain 4 Percentage	Domain 5 Percentage
1	A	103	68.7%	17	24	25	24	13	56.7%	68.6%	83.3%	80.0%	52.0%
2	B	121	80.7%	26	31	25	24	15	86.7%	88.6%	83.3%	80.0%	60.0%
3	A	101	67.3%	19	25	23	18	16	63.3%	71.4%	76.7%	60.0%	64.0%
4	B	114	76.0%	22	31	25	21	15	73.3%	88.6%	83.3%	70.0%	60.0%
5	A	114	76.0%	22	28	26	23	15	73.3%	80.0%	86.7%	76.7%	60.0%
6	B	108	72.0%	19	29	20	23	17	63.3%	82.9%	66.7%	76.7%	68.0%
7	A	123	82.0%	24	31	25	26	17	80.0%	88.6%	83.3%	86.7%	68.0%
8	B	94	62.7%	16	24	19	18	17	53.3%	68.6%	63.3%	60.0%	68.0%
9	A	102	68.0%	20	26	20	22	14	66.7%	74.3%	66.7%	73.3%	56.0%
10	B	103	68.7%	25	22	23	20	13	83.3%	62.9%	76.7%	66.7%	52.0%
11	A	101	67.3%	20	27	22	19	13	66.7%	77.1%	73.3%	63.3%	52.0%
12	B	107	71.3%	18	30	23	19	17	60.0%	85.7%	76.7%	63.3%	68.0%
13	A	107	71.3%	19	22	23	23	20	63.3%	62.9%	76.7%	76.7%	80.0%
14	B	105	70.0%	17	29	23	21	15	56.7%	82.9%	76.7%	70.0%	60.0%
15	A	110	73.3%	23	26	23	21	17	76.7%	74.3%	76.7%	70.0%	68.0%
16	B	115	76.7%	23	29	25	20	18	76.7%	82.9%	83.3%	66.7%	72.0%
17	A	119	79.3%	24	30	26	23	16	80.0%	85.7%	86.7%	76.7%	64.0%
18	B	104	69.3%	24	29	23	16	12	80.0%	82.9%	76.7%	53.3%	48.0%
19	A	87	58.0%	18	19	18	16	16	60.0%	54.3%	60.0%	53.3%	64.0%
20	B	118	78.7%	25	29	23	24	17	83.3%	82.9%	76.7%	80.0%	68.0%
21	A	99	66.0%	19	24	21	21	14	63.3%	68.6%	70.0%	70.0%	56.0%
22	B	99	66.0%	20	27	22	15	15	66.7%	77.1%	73.3%	50.0%	60.0%
23	A	115	76.7%	22	26	28	21	18	73.3%	74.3%	93.3%	70.0%	72.0%

Student	Form	Overall Score	Overall Percentage	Domain 1 Score	Domain 2 Score	Domain 3 Score	Domain 4 Score	Domain 5 Score	Domain 1 Percentage	Domain 2 Percentage	Domain 3 Percentage	Domain 4 Percentage	Domain 5 Percentage
24	B	84	56.0%	15	22	17	18	12	50.0%	62.9%	56.7%	60.0%	48.0%
25	A	114	76.0%	23	29	25	21	16	76.7%	82.9%	83.3%	70.0%	64.0%
26	B	113	75.3%	22	25	23	25	18	73.3%	71.4%	76.7%	83.3%	72.0%
27	A	92	61.3%	13	27	16	22	14	43.3%	77.1%	53.3%	73.3%	56.0%
28	B	98	65.3%	18	30	20	18	12	60.0%	85.7%	66.7%	60.0%	48.0%
29	A	102	68.0%	18	24	22	21	17	60.0%	68.6%	73.3%	70.0%	68.0%
30	B	99	66.0%	18	20	23	22	16	60.0%	57.1%	76.7%	73.3%	64.0%
31	A	106	70.7%	18	28	23	23	14	60.0%	80.0%	76.7%	76.7%	56.0%
32	B	78	52.0%	12	20	16	14	16	40.0%	57.1%	53.3%	46.7%	64.0%
33	A	91	60.7%	17	24	20	16	14	56.7%	68.6%	66.7%	53.3%	56.0%
34	B	101	67.3%	21	27	19	17	17	70.0%	77.1%	63.3%	56.7%	68.0%
35	A	115	76.7%	24	26	26	22	17	80.0%	74.3%	86.7%	73.3%	68.0%
36	B	117	78.0%	25	31	25	22	14	83.3%	88.6%	83.3%	73.3%	56.0%
37	A	113	75.3%	21	27	25	23	17	70.0%	77.1%	83.3%	76.7%	68.0%
38	B	92	61.3%	18	25	23	13	13	60.0%	71.4%	76.7%	43.3%	52.0%
39	A	117	78.0%	25	26	29	21	16	83.3%	74.3%	96.7%	70.0%	64.0%
40	B	96	64.0%	15	25	20	17	19	50.0%	71.4%	66.7%	56.7%	76.0%
41	A	95	63.3%	14	25	17	20	19	46.7%	71.4%	56.7%	66.7%	76.0%
42	B	112	74.7%	24	29	23	22	14	80.0%	82.9%	76.7%	73.3%	56.0%
43	A	118	78.7%	22	31	23	26	16	73.3%	88.6%	76.7%	86.7%	64.0%
44	B	85	56.7%	17	21	19	15	13	56.7%	60.0%	63.3%	50.0%	52.0%
45	A	100	66.7%	19	25	24	19	13	63.3%	71.4%	80.0%	63.3%	52.0%
46	B	105	70.0%	21	27	22	21	14	70.0%	77.1%	73.3%	70.0%	56.0%
47	A	96	64.0%	15	24	18	21	18	50.0%	68.6%	60.0%	70.0%	72.0%
48	B	121	80.7%	27	31	24	23	16	90.0%	88.6%	80.0%	76.7%	64.0%
49	A	114	76.0%	21	29	24	23	17	70.0%	82.9%	80.0%	76.7%	68.0%
50	B	99	66.0%	19	25	21	20	14	63.3%	71.4%	70.0%	66.7%	56.0%
51	A	113	75.3%	20	30	23	22	18	66.7%	85.7%	76.7%	73.3%	72.0%
52	B	104	69.3%	21	28	21	17	17	70.0%	80.0%	70.0%	56.7%	68.0%
53	A	98	65.3%	19	20	24	20	15	63.3%	57.1%	80.0%	66.7%	60.0%
54	B	126	84.0%	25	33	26	25	17	83.3%	94.3%	86.7%	83.3%	68.0%
55	A	123	82.0%	26	29	25	24	19	86.7%	82.9%	83.3%	80.0%	76.0%
56	B	104	69.3%	22	29	20	21	12	73.3%	82.9%	66.7%	70.0%	48.0%
57	A	103	68.7%	17	27	21	19	19	56.7%	77.1%	70.0%	63.3%	76.0%
58	B	99	66.0%	20	24	18	21	16	66.7%	68.6%	60.0%	70.0%	64.0%
59	A	119	79.3%	21	29	25	25	19	70.0%	82.9%	83.3%	83.3%	76.0%
60	B	116	77.3%	22	32	22	23	17	73.3%	91.4%	73.3%	76.7%	68.0%
61	A	106	70.7%	17	25	26	21	17	56.7%	71.4%	86.7%	70.0%	68.0%
62	B	91	60.7%	16	26	20	14	15	53.3%	74.3%	66.7%	46.7%	60.0%
63	A	97	64.7%	19	24	25	17	12	63.3%	68.6%	83.3%	56.7%	48.0%
65	A	122	81.3%	23	33	24	24	18	76.7%	94.3%	80.0%	80.0%	72.0%
66	B	107	71.3%	22	28	22	19	16	73.3%	80.0%	73.3%	63.3%	64.0%
67	A	122	81.3%	25	29	25	24	19	83.3%	82.9%	83.3%	80.0%	76.0%
68	B	108	72.0%	21	29	22	21	15	70.0%	82.9%	73.3%	70.0%	60.0%
69	A	119	79.3%	24	29	24	24	18	80.0%	82.9%	80.0%	80.0%	72.0%
70	B	103	68.7%	16	30	20	22	15	53.3%	85.7%	66.7%	73.3%	60.0%
71	A	88	58.7%	17	18	18	19	16	56.7%	51.4%	60.0%	63.3%	64.0%
72	B	110	73.3%	22	31	23	19	15	73.3%	88.6%	76.7%	63.3%	60.0%
73	A	117	78.0%	24	28	28	21	16	80.0%	80.0%	93.3%	70.0%	64.0%
74	B	108	72.0%	18	30	21	23	16	60.0%	85.7%	70.0%	76.7%	64.0%
75	A	119	79.3%	22	29	26	26	16	73.3%	82.9%	86.7%	86.7%	64.0%
76	B	112	74.7%	24	28	20	21	19	80.0%	80.0%	66.7%	70.0%	76.0%
77	A	88	58.7%	13	23	20	15	17	43.3%	65.7%	66.7%	50.0%	68.0%
78	B	115	76.7%	22	29	24	21	19	73.3%	82.9%	80.0%	70.0%	76.0%
79	A	120	80.0%	25	31	23	24	17	83.3%	88.6%	76.7%	80.0%	68.0%
80	B	106	70.7%	20	26	22	23	15	66.7%	74.3%	73.3%	76.7%	60.0%
81	A	122	81.3%	21	32	26	26	17	70.0%	91.4%	86.7%	86.7%	68.0%
82	B	122	81.3%	23	30	23	25	21	76.7%	85.7%	76.7%	83.3%	84.0%
83	A	112	74.7%	20	29	19	25	19	66.7%	82.9%	63.3%	83.3%	76.0%
84	B	102	68.0%	25	26	18	18	15	83.3%	74.3%	60.0%	60.0%	60.0%
85	A	88	58.7%	17	25	17	15	14	56.7%	71.4%	56.7%	50.0%	56.0%
86	B	106	70.7%	21	32	21	17	15	70.0%	91.4%	70.0%	56.7%	60.0%
87	A	104	69.3%	22	21	23	22	16	73.3%	60.0%	76.7%	73.3%	64.0%
88	B	101	67.3%	15	24	23	23	16	50.0%	68.6%	76.7%	76.7%	64.0%
89	A	106	70.7%	20	28	22	18	18	66.7%	80.0%	73.3%	60.0%	72.0%
90	B	101	67.3%	17	30	24	15	15	56.7%	85.7%	80.0%	50.0%	60.0%
91	A	111	74.0%	24	27	24	24	12	80.0%	77.1%	80.0%	80.0%	48.0%
92	B	117	78.0%	24	28	26	22	17	80.0%	80.0%	86.7%	73.3%	68.0%
93	A	100	66.7%	20	21	19	24	16	66.7%	60.0%	63.3%	80.0%	64.0%
94	B	108	72.0%	23	32	20	16	17	76.7%	91.4%	66.7%	53.3%	68.0%
95	A	96	64.0%	17	22	21	21	15	56.7%	62.9%	70.0%	70.0%	60.0%
96	B	112	74.7%	23	29	23	21	16	76.7%	82.9%	76.7%	70.0%	64.0%
97	A	117	78.0%	20	29	28	24	16	66.7%	82.9%	93.3%	80.0%	64.0%
98	B	79	52.7%	15	17	19	14	14	50.0%	48.6%	63.3%	46.7%	56.0%
99	A	106	70.7%	18	26	23	23	16	60.0%	74.3%	76.7%	76.7%	64.0%
100	B	110	73.3%	24	28	20	21	17	80.0%	80.0%	66.7%	70.0%	68.0%

Section A - Student Scores Sorted Highest to Lowest Overall Score

Student	Form	Overall Percentage	Overall Score	Domain 1 Percentage	Domain 2 Percentage	Domain 3 Percentage	Domain 4 Percentage	Domain 5 Percentage	Domain 1 Score	Domain 2 Score	Domain 3 Score	Domain 4 Score	Domain 5 Score
54	B	84.0%	126	83.3%	94.3%	86.7%	83.3%	68.0%	25	33	26	25	17
7	A	82.0%	123	80.0%	88.6%	83.3%	86.7%	68.0%	24	31	25	26	17
55	A	82.0%	123	86.7%	82.9%	83.3%	80.0%	76.0%	26	29	25	24	19
65	A	81.3%	122	76.7%	94.3%	80.0%	80.0%	72.0%	23	33	24	24	18
67	A	81.3%	122	83.3%	82.9%	83.3%	80.0%	76.0%	25	29	25	24	19
81	A	81.3%	122	70.0%	91.4%	86.7%	86.7%	68.0%	21	32	26	26	17
82	B	81.3%	122	76.7%	85.7%	76.7%	83.3%	84.0%	23	30	23	25	21
2	B	80.7%	121	86.7%	88.6%	83.3%	80.0%	60.0%	26	31	25	24	15
48	B	80.7%	121	90.0%	88.6%	80.0%	76.7%	64.0%	27	31	24	23	16
79	A	80.0%	120	83.3%	88.6%	76.7%	80.0%	68.0%	25	31	23	24	17
17	A	79.3%	119	80.0%	85.7%	86.7%	76.7%	64.0%	24	30	26	23	16
59	A	79.3%	119	70.0%	82.9%	83.3%	83.3%	76.0%	21	29	25	25	19
69	A	79.3%	119	80.0%	82.9%	80.0%	80.0%	72.0%	24	29	24	24	18
75	A	79.3%	119	73.3%	82.9%	86.7%	86.7%	64.0%	22	29	26	26	16
20	B	78.7%	118	83.3%	82.9%	76.7%	80.0%	68.0%	25	29	23	24	17
43	A	78.7%	118	73.3%	88.6%	76.7%	86.7%	64.0%	22	31	23	26	16
36	B	78.0%	117	83.3%	88.6%	83.3%	73.3%	56.0%	25	31	25	22	14
39	A	78.0%	117	83.3%	74.3%	96.7%	70.0%	64.0%	25	26	29	21	16
73	A	78.0%	117	80.0%	80.0%	93.3%	70.0%	64.0%	24	28	28	21	16
92	B	78.0%	117	80.0%	80.0%	86.7%	73.3%	68.0%	24	28	26	22	17
97	A	78.0%	117	66.7%	82.9%	93.3%	80.0%	64.0%	20	29	28	24	16
60	B	77.3%	116	73.3%	91.4%	73.3%	76.7%	68.0%	22	32	22	23	17
16	B	76.7%	115	76.7%	82.9%	83.3%	66.7%	72.0%	23	29	25	20	18
23	A	76.7%	115	73.3%	74.3%	93.3%	70.0%	72.0%	22	26	28	21	18
35	A	76.7%	115	80.0%	74.3%	86.7%	73.3%	68.0%	24	26	26	22	17
78	B	76.7%	115	73.3%	82.9%	80.0%	70.0%	76.0%	22	29	24	21	19
4	B	76.0%	114	73.3%	88.6%	83.3%	70.0%	60.0%	22	31	25	21	15
5	A	76.0%	114	73.3%	80.0%	86.7%	76.7%	60.0%	22	28	26	23	15
25	A	76.0%	114	76.7%	82.9%	83.3%	70.0%	64.0%	23	29	25	21	16
49	A	76.0%	114	70.0%	82.9%	80.0%	76.7%	68.0%	21	29	24	23	17
26	B	75.3%	113	73.3%	71.4%	76.7%	83.3%	72.0%	22	25	23	25	18
37	A	75.3%	113	70.0%	77.1%	83.3%	76.7%	68.0%	21	27	25	23	17
51	A	75.3%	113	66.7%	85.7%	76.7%	73.3%	72.0%	20	30	23	22	18
42	B	74.7%	112	80.0%	82.9%	76.7%	73.3%	56.0%	24	29	23	22	14
76	B	74.7%	112	80.0%	80.0%	66.7%	70.0%	76.0%	24	28	20	21	19
83	A	74.7%	112	66.7%	82.9%	63.3%	83.3%	76.0%	20	29	19	25	19
96	B	74.7%	112	76.7%	82.9%	76.7%	70.0%	64.0%	23	29	23	21	16
91	A	74.0%	111	80.0%	77.1%	80.0%	80.0%	48.0%	24	27	24	24	12
15	A	73.3%	110	76.7%	74.3%	76.7%	70.0%	68.0%	23	26	23	21	17
72	B	73.3%	110	73.3%	88.6%	76.7%	63.3%	60.0%	22	31	23	19	15
100	B	73.3%	110	80.0%	80.0%	66.7%	70.0%	68.0%	24	28	20	21	17
6	B	72.0%	108	63.3%	82.9%	66.7%	76.7%	68.0%	19	29	20	23	17
68	B	72.0%	108	70.0%	82.9%	73.3%	70.0%	60.0%	21	29	22	21	15
74	B	72.0%	108	60.0%	85.7%	70.0%	76.7%	64.0%	18	30	21	23	16
94	B	72.0%	108	76.7%	91.4%	66.7%	53.3%	68.0%	23	32	20	16	17
12	B	71.3%	107	60.0%	85.7%	76.7%	63.3%	68.0%	18	30	23	19	17
13	A	71.3%	107	63.3%	62.9%	76.7%	76.7%	80.0%	19	22	23	23	20
66	B	71.3%	107	73.3%	80.0%	73.3%	63.3%	64.0%	22	28	22	19	16
31	A	70.7%	106	60.0%	80.0%	76.7%	76.7%	56.0%	18	28	23	23	14
61	A	70.7%	106	56.7%	71.4%	86.7%	70.0%	68.0%	17	25	26	21	17
80	B	70.7%	106	66.7%	74.3%	73.3%	76.7%	60.0%	20	26	22	23	15
86	B	70.7%	106	70.0%	91.4%	70.0%	56.7%	60.0%	21	32	21	17	15
89	A	70.7%	106	66.7%	80.0%	73.3%	60.0%	72.0%	20	28	22	18	18
99	A	70.7%	106	60.0%	74.3%	76.7%	76.7%	64.0%	18	26	23	23	16
14	B	70.0%	105	56.7%	82.9%	76.7%	70.0%	60.0%	17	29	23	21	15
46	B	70.0%	105	70.0%	77.1%	73.3%	70.0%	56.0%	21	27	22	21	14
18	B	69.3%	104	80.0%	82.9%	76.7%	53.3%	48.0%	24	29	23	16	12
52	B	69.3%	104	70.0%	80.0%	70.0%	56.7%	68.0%	21	28	21	17	17
56	B	69.3%	104	73.3%	82.9%	66.7%	70.0%	48.0%	22	29	20	21	12
87	A	69.3%	104	73.3%	60.0%	76.7%	73.3%	64.0%	22	21	23	22	16
1	A	68.7%	103	56.7%	68.6%	83.3%	80.0%	52.0%	17	24	25	24	13
10	B	68.7%	103	83.3%	62.9%	76.7%	66.7%	52.0%	25	22	23	20	13
57	A	68.7%	103	56.7%	77.1%	70.0%	63.3%	76.0%	17	27	21	19	19
70	B	68.7%	103	53.3%	85.7%	66.7%	73.3%	60.0%	16	30	20	22	15
9	A	68.0%	102	66.7%	74.3%	66.7%	73.3%	56.0%	20	26	20	22	14
29	A	68.0%	102	60.0%	68.6%	73.3%	70.0%	68.0%	18	24	22	21	17
84	B	68.0%	102	83.3%	74.3%	60.0%	60.0%	60.0%	25	26	18	18	15
3	A	67.3%	101	63.3%	71.4%	76.7%	60.0%	64.0%	19	25	23	18	16
11	A	67.3%	101	66.7%	77.1%	73.3%	63.3%	52.0%	20	27	22	19	13
34	B	67.3%	101	70.0%	77.1%	63.3%	56.7%	68.0%	21	27	19	17	17
88	B	67.3%	101	50.0%	68.6%	76.7%	76.7%	64.0%	15	24	23	23	16
90	B	67.3%	101	56.7%	85.7%	80.0%	50.0%	60.0%	17	30	24	15	15
45	A	66.7%	100	63.3%	71.4%	80.0%	63.3%	52.0%	19	25	24	19	13
93	A	66.7%	100	66.7%	60.0%	63.3%	80.0%	64.0%	20	21	19	24	16
21	A	66.0%	99	63.3%	68.6%	70.0%	70.0%	56.0%	19	24	21	21	14

Student	Form	Overall Percentage	Overall Score	Domain 1 Percentage	Domain 2 Percentage	Domain 3 Percentage	Domain 4 Percentage	Domain 5 Percentage	Domain 1 Score	Domain 2 Score	Domain 3 Score	Domain 4 Score	Domain 5 Score
22	B	66.0%	99	66.7%	77.1%	73.3%	50.0%	60.0%	20	27	22	15	15
30	B	66.0%	99	60.0%	57.1%	76.7%	73.3%	64.0%	18	20	23	22	16
50	B	66.0%	99	63.3%	71.4%	70.0%	66.7%	56.0%	19	25	21	20	14
58	B	66.0%	99	66.7%	68.6%	60.0%	70.0%	64.0%	20	24	18	21	16
28	B	65.3%	98	60.0%	85.7%	66.7%	60.0%	48.0%	18	30	20	18	12
53	A	65.3%	98	63.3%	57.1%	80.0%	66.7%	60.0%	19	20	24	20	15
63	A	64.7%	97	63.3%	68.6%	83.3%	56.7%	48.0%	19	24	25	17	12
40	B	64.0%	96	50.0%	71.4%	66.7%	56.7%	76.0%	15	25	20	17	19
47	A	64.0%	96	50.0%	68.6%	60.0%	70.0%	72.0%	15	24	18	21	18
95	A	64.0%	96	56.7%	62.9%	70.0%	70.0%	60.0%	17	22	21	21	15
41	A	63.3%	95	46.7%	71.4%	56.7%	66.7%	76.0%	14	25	17	20	19
8	B	62.7%	94	53.3%	68.6%	63.3%	60.0%	68.0%	16	24	19	18	17
27	A	61.3%	92	43.3%	77.1%	53.3%	73.3%	56.0%	13	27	16	22	14
38	B	61.3%	92	60.0%	71.4%	76.7%	43.3%	52.0%	18	25	23	13	13
33	A	60.7%	91	56.7%	68.6%	66.7%	53.3%	56.0%	17	24	20	16	14
62	B	60.7%	91	53.3%	74.3%	66.7%	46.7%	60.0%	16	26	20	14	15
71	A	58.7%	88	56.7%	51.4%	60.0%	63.3%	64.0%	17	18	18	19	16
77	A	58.7%	88	43.3%	65.7%	66.7%	50.0%	68.0%	13	23	20	15	17
85	A	58.7%	88	56.7%	71.4%	56.7%	50.0%	56.0%	17	25	17	15	14
19	A	58.0%	87	60.0%	54.3%	60.0%	53.3%	64.0%	18	19	18	16	16
44	B	56.7%	85	56.7%	60.0%	63.3%	50.0%	52.0%	17	21	19	15	13
24	B	56.0%	84	50.0%	62.9%	56.7%	60.0%	48.0%	15	22	17	18	12
98	B	52.7%	79	50.0%	48.6%	63.3%	46.7%	56.0%	15	17	19	14	14
32	B	52.0%	78	40.0%	57.1%	53.3%	46.7%	64.0%	12	20	16	14	16

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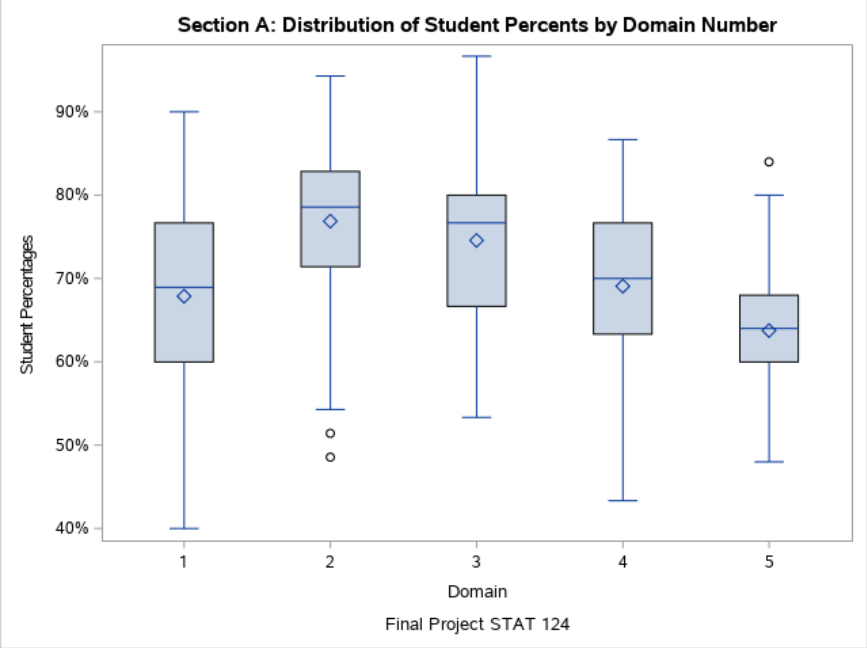

Section B: Question Analysis Sorted by Exam Form and Question Number

Form	Question Number	Question Percentage
A	1	16.0%
A	2	76.0%
A	3	42.0%
A	4	94.0%
A	5	84.0%
A	6	70.0%
A	7	78.0%
A	8	88.0%
A	9	100%
A	10	50.0%
A	11	30.0%
A	12	66.0%
A	13	76.0%
A	14	66.0%
A	15	66.0%
A	16	46.0%
A	17	82.0%
A	18	52.0%
A	19	28.0%

Form	Question Number	Question Percentage
A	20	88.0%
A	21	74.0%
A	22	98.0%
A	23	32.0%
A	24	96.0%
A	25	36.0%
A	26	78.0%
A	27	76.0%
A	28	56.0%
A	29	80.0%
A	30	28.0%
A	31	94.0%
A	32	94.0%
A	33	54.0%
A	34	54.0%
A	35	52.0%
A	36	42.0%
A	37	86.0%
A	38	98.0%
A	39	100%
A	40	90.0%
A	41	90.0%
A	42	52.0%
A	43	78.0%
A	44	38.0%
A	45	94.0%
A	46	90.0%
A	47	84.0%
A	48	72.0%
A	49	84.0%
A	50	68.0%
A	51	94.0%
A	52	76.0%
A	53	80.0%
A	54	82.0%
A	55	34.0%
A	56	54.0%
A	57	94.0%
A	58	82.0%
A	59	96.0%
A	60	98.0%
A	61	98.0%
A	62	86.0%
A	63	34.0%
A	64	98.0%
A	65	96.0%
A	66	92.0%
A	67	96.0%
A	68	88.0%
A	69	38.0%
A	70	86.0%
A	71	98.0%
A	72	92.0%
A	73	68.0%
A	74	68.0%
A	75	68.0%
A	76	86.0%
A	77	64.0%
A	78	60.0%
A	79	96.0%
A	80	72.0%
A	81	98.0%
A	82	30.0%
A	83	90.0%
A	84	52.0%
A	85	94.0%
A	86	90.0%
A	87	90.0%
A	88	80.0%
A	89	96.0%
A	90	12.0%
A	91	56.0%
A	92	96.0%
A	93	84.0%
A	94	16.0%
A	95	98.0%
A	96	90.0%
A	97	78.0%
A	98	36.0%

Form	Question Number	Question Percentage
A	99	8.0%
A	100	54.0%
A	101	100%
A	102	100%
A	103	96.0%
A	104	58.0%
A	105	60.0%
A	106	40.0%
A	107	86.0%
A	108	96.0%
A	109	88.0%
A	110	52.0%
A	111	60.0%
A	112	76.0%
A	113	52.0%
A	114	56.0%
A	115	88.0%
A	116	40.0%
A	117	54.0%
A	118	94.0%
A	119	68.0%
A	120	24.0%
A	121	70.0%
A	122	96.0%
A	123	66.0%
A	124	96.0%
A	125	14.0%
A	126	18.0%
A	127	20.0%
A	128	58.0%
A	129	100%
A	130	98.0%
A	131	94.0%
A	132	92.0%
A	133	90.0%
A	134	68.0%
A	135	98.0%
A	136	84.0%
A	137	88.0%
A	138	60.0%
A	139	8.0%
A	140	66.0%
A	141	74.0%
A	142	94.0%
A	143	92.0%
A	144	76.0%
A	145	96.0%
A	146	78.0%
A	147	100%
A	148	6.0%
A	149	76.0%
A	150	88.0%
B	1	6.1%
B	2	36.7%
B	3	83.7%
B	4	100%
B	5	51.0%
B	6	73.5%
B	7	36.7%
B	8	67.3%
B	9	63.3%
B	10	61.2%
B	11	91.8%
B	12	20.4%
B	13	89.8%
B	14	100%
B	15	98.0%
B	16	71.4%
B	17	83.7%
B	18	93.9%
B	19	75.5%
B	20	100%
B	21	77.6%
B	22	85.7%
B	23	71.4%
B	24	75.5%
B	25	93.9%
B	26	100%
B	27	59.2%

Form	Question Number	Question Percentage
B	28	59.2%
B	29	75.5%
B	30	57.1%
B	31	95.9%
B	32	93.9%
B	33	93.9%
B	34	98.0%
B	35	63.3%
B	36	91.8%
B	37	87.8%
B	38	38.8%
B	39	69.4%
B	40	95.9%
B	41	98.0%
B	42	93.9%
B	43	26.5%
B	44	61.2%
B	45	98.0%
B	46	87.8%
B	47	55.1%
B	48	89.8%
B	49	69.4%
B	50	16.3%
B	51	67.3%
B	52	14.3%
B	53	63.3%
B	54	75.5%
B	55	65.3%
B	56	91.8%
B	57	32.7%
B	58	100%
B	59	79.6%
B	60	55.1%
B	61	95.9%
B	62	61.2%
B	63	73.5%
B	64	83.7%
B	65	95.9%
B	66	93.9%
B	67	95.9%
B	68	81.6%
B	69	24.5%
B	70	14.3%
B	71	89.8%
B	72	91.8%
B	73	59.2%
B	74	67.3%
B	75	91.8%
B	76	59.2%
B	77	24.5%
B	78	63.3%
B	79	81.6%
B	80	75.5%
B	81	63.3%
B	82	30.6%
B	83	4.1%
B	84	55.1%
B	85	14.3%
B	86	32.7%
B	87	40.8%
B	88	91.8%
B	89	77.6%
B	90	14.3%
B	91	73.5%
B	92	95.9%
B	93	10.2%
B	94	91.8%
B	95	30.6%
B	96	98.0%
B	97	53.1%
B	98	100%
B	99	55.1%
B	100	91.8%
B	101	75.5%
B	102	75.5%
B	103	91.8%
B	104	81.6%
B	105	83.7%
B	106	79.6%

Form	Question Number	Question Percentage
B	107	59.2%
B	108	79.6%
B	109	91.8%
B	110	83.7%
B	111	89.8%
B	112	100%
B	113	87.8%
B	114	61.2%
B	115	14.3%
B	116	91.8%
B	117	63.3%
B	118	91.8%
B	119	26.5%
B	120	51.0%
B	121	91.8%
B	122	91.8%
B	123	100%
B	124	81.6%
B	125	8.2%
B	126	89.8%
B	127	65.3%
B	128	34.7%
B	129	95.9%
B	130	75.5%
B	131	40.8%
B	132	91.8%
B	133	59.2%
B	134	73.5%
B	135	93.9%
B	136	89.8%
B	137	16.3%
B	138	79.6%
B	139	98.0%
B	140	4.1%
B	141	91.8%
B	142	95.9%
B	143	42.9%
B	144	93.9%
B	145	53.1%
B	146	28.6%
B	147	98.0%
B	148	85.7%
B	149	91.8%
B	150	100%

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Section B: Question Analysis Sorted by Question Percentage

Question Percentage	Form	Question Number
100%	B	4
100%	A	9
100%	B	14
100%	B	20
100%	B	26
100%	A	39
100%	B	58
100%	B	98
100%	A	101
100%	A	102
100%	B	112
100%	B	123
100%	A	129
100%	A	147
100%	B	150
98.0%	A	22
98.0%	A	38
98.0%	A	60
98.0%	A	61
98.0%	A	64
98.0%	A	71
98.0%	A	81
98.0%	A	95
98.0%	A	130
98.0%	A	135
98.0%	B	15
98.0%	B	34
98.0%	B	41

Question Percentage	Form	Question Number
98.0%	B	45
98.0%	B	96
98.0%	B	139
98.0%	B	147
96.0%	A	24
96.0%	A	59
96.0%	A	65
96.0%	A	67
96.0%	A	79
96.0%	A	89
96.0%	A	92
96.0%	A	103
96.0%	A	108
96.0%	A	122
96.0%	A	124
96.0%	A	145
95.9%	B	31
95.9%	B	40
95.9%	B	61
95.9%	B	65
95.9%	B	67
95.9%	B	92
95.9%	B	129
95.9%	B	142
94.0%	A	4
94.0%	A	31
94.0%	A	32
94.0%	A	45
94.0%	A	51
94.0%	A	57
94.0%	A	85
94.0%	A	118
94.0%	A	131
94.0%	A	142
93.9%	B	18
93.9%	B	25
93.9%	B	32
93.9%	B	33
93.9%	B	42
93.9%	B	66
93.9%	B	135
93.9%	B	144
92.0%	A	66
92.0%	A	72
92.0%	A	132
92.0%	A	143
91.8%	B	11
91.8%	B	36
91.8%	B	56
91.8%	B	72
91.8%	B	75
91.8%	B	88
91.8%	B	94
91.8%	B	100
91.8%	B	103
91.8%	B	109
91.8%	B	116
91.8%	B	118
91.8%	B	121
91.8%	B	122
91.8%	B	132
91.8%	B	141
91.8%	B	149
90.0%	A	40
90.0%	A	41
90.0%	A	46
90.0%	A	83
90.0%	A	86
90.0%	A	87
90.0%	A	96
90.0%	A	133
89.8%	B	13
89.8%	B	48
89.8%	B	71
89.8%	B	111
89.8%	B	126
89.8%	B	136
88.0%	A	8
88.0%	A	20

Question Percentage	Form	Question Number
88.0%	A	68
88.0%	A	109
88.0%	A	115
88.0%	A	137
88.0%	A	150
87.8%	B	37
87.8%	B	46
87.8%	B	113
86.0%	A	37
86.0%	A	62
86.0%	A	70
86.0%	A	76
86.0%	A	107
85.7%	B	22
85.7%	B	148
84.0%	A	5
84.0%	A	47
84.0%	A	49
84.0%	A	93
84.0%	A	136
83.7%	B	3
83.7%	B	17
83.7%	B	64
83.7%	B	105
83.7%	B	110
82.0%	A	17
82.0%	A	54
82.0%	A	58
81.6%	B	68
81.6%	B	79
81.6%	B	104
81.6%	B	124
80.0%	A	29
80.0%	A	53
80.0%	A	88
79.6%	B	59
79.6%	B	106
79.6%	B	108
79.6%	B	138
78.0%	A	7
78.0%	A	26
78.0%	A	43
78.0%	A	97
78.0%	A	146
77.6%	B	21
77.6%	B	89
76.0%	A	2
76.0%	A	13
76.0%	A	27
76.0%	A	52
76.0%	A	112
76.0%	A	144
76.0%	A	149
75.5%	B	19
75.5%	B	24
75.5%	B	29
75.5%	B	54
75.5%	B	80
75.5%	B	101
75.5%	B	102
75.5%	B	130
74.0%	A	21
74.0%	A	141
73.5%	B	6
73.5%	B	63
73.5%	B	91
73.5%	B	134
72.0%	A	48
72.0%	A	80
71.4%	B	16
71.4%	B	23
70.0%	A	6
70.0%	A	121
69.4%	B	39
69.4%	B	49
68.0%	A	50
68.0%	A	73
68.0%	A	74
68.0%	A	75

Question Percentage	Form	Question Number
68.0%	A	119
68.0%	A	134
67.3%	B	8
67.3%	B	51
67.3%	B	74
66.0%	A	12
66.0%	A	14
66.0%	A	15
66.0%	A	123
66.0%	A	140
65.3%	B	55
65.3%	B	127
64.0%	A	77
63.3%	B	9
63.3%	B	35
63.3%	B	53
63.3%	B	78
63.3%	B	81
63.3%	B	117
61.2%	B	10
61.2%	B	44
61.2%	B	62
61.2%	B	114
60.0%	A	78
60.0%	A	105
60.0%	A	111
60.0%	A	138
59.2%	B	27
59.2%	B	28
59.2%	B	73
59.2%	B	76
59.2%	B	107
59.2%	B	133
58.0%	A	104
58.0%	A	128
57.1%	B	30
56.0%	A	28
56.0%	A	91
56.0%	A	114
55.1%	B	47
55.1%	B	60
55.1%	B	84
55.1%	B	99
54.0%	A	33
54.0%	A	34
54.0%	A	56
54.0%	A	100
54.0%	A	117
53.1%	B	97
53.1%	B	145
52.0%	A	18
52.0%	A	35
52.0%	A	42
52.0%	A	84
52.0%	A	110
52.0%	A	113
51.0%	B	5
51.0%	B	120
50.0%	A	10
46.0%	A	16
42.9%	B	143
42.0%	A	3
42.0%	A	36
40.8%	B	87
40.8%	B	131
40.0%	A	106
40.0%	A	116
38.8%	B	38
38.0%	A	44
38.0%	A	69
36.7%	B	2
36.7%	B	7
36.0%	A	25
36.0%	A	98
34.7%	B	128
34.0%	A	55
34.0%	A	63
32.7%	B	57
32.7%	B	86

Question Percentage	Form	Question Number
32.0%	A	23
30.6%	B	82
30.6%	B	95
30.0%	A	11
30.0%	A	82
28.6%	B	146
28.0%	A	19
28.0%	A	30
26.5%	B	43
26.5%	B	119
24.5%	B	69
24.5%	B	77
24.0%	A	120
20.4%	B	12
20.0%	A	127
18.0%	A	126
16.3%	B	50
16.3%	B	137
16.0%	A	1
16.0%	A	94
14.3%	B	52
14.3%	B	70
14.3%	B	85
14.3%	B	90
14.3%	B	115
14.0%	A	125
12.0%	A	90
10.2%	B	93
8.2%	B	125
8.0%	A	99
8.0%	A	139
6.1%	B	1
6.0%	A	148
4.1%	B	83
4.1%	B	140

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