```sas
/* Khoong Wei Hao   A0140425U   ST2137   T03 */

* Q1;
data htwt;
    infile '~/tut1htwt.csv' delimiter=",";
    input id gender $ height weight siblings;
run;

data test;
    infile '~/tut1test.csv' delimiter=",";
    input id test;
run;

* Q2;
data htwtf;
    set htwt;
    where (gender = "F");
run;
/* Ans: Total of 161 females */

* Q3;
* merge htwt and test, but sort first;
proc sort data=htwt;
by id;
proc sort data=test;
by id;

data htwttest;
    merge htwt test;
    by id;
run;
* get individuals taller than 184cm;
data tallerthan184;
    set htwttest;
    where (height > 184);
run;
/* Ans: There are 2 such individuals. Their id and test scores are respectively
id=160, test=62 and id=367, test=93.  */

* Q4;
data htwtfixed;
    infile '~/tut1htwtfixed.txt';
    input id 1-3 gender $ 4 height 5-7 weight 8-9 siblings 10;
run;

* Q5;
data htwtfixedremo;
    set htwtfixed;
    where (id ^= 356);
run;

* Q6;
* sort htwtfixed first;
proc sort data=htwtfixed;
by id;
* add in test scores by merging;
data mergehtwtfixed;
    merge htwtfixed test;
    by id;
run;
* remove id 356 like in Q5;
```

```sas
data mergehtwtfixedremo;
    set mergehtwtfixed;
    where (id ^= 356);
run;

* first get only females;
data htwtfixedremofemales;
    set mergehtwtfixedremo;
    where (gender = "F");
run;
* then sort in descending order;
proc sort data=htwtfixedremofemales;
by descending height;

data tallest2female;
    set htwtfixedremofemales(obs=2);
run;

/* Ans: The second tallest female is id=375 with height=173, weight=56, test score=85. */

* Q7;
data htwttestgrade;
    set htwttest;
    if test >= 80 then grade="A";
        else if 70 <= test < 80 then grade="B";
            else if 60 <= test < 70 then grade="C";
                else if 50 <= test < 60 then grade="D";
                    else grade="F";
run;

* get male students with F grade;
data malefgrade;
    set htwttestgrade;
    where (gender="M") and (grade="F");
run;

/* Ans: 15 male students get a F grade. */

* Q8a;
data doq8a;
    do batch = 1 to 3;
        do treatment = 1 to 4;
            input temperature @@;
            output;
        end;
    end;
datalines;
303 311 289 270
242 290 259 263
289 282 277 257
run;

* Q8b;
data q8b;
    input batch treatment temperature @@;
    datalines;
1 1 303 1 2 311 1 3 289 1 4 270
2 1 242 2 2 290 2 3 259 2 4 263
3 1 289 3 2 282 3 3 277 3 4 257
run;

* Q8c;
```

```
data doq8c;
    do batch = 1 to 3;
        do treatment = 1 to 4;
            input temperature @@;
            output;
        end;
    end;
datalines;
303 311 289 270
242 . 259 263
```