Unix Tools
Courant Institute of Mathematical Sciences
Homework assignment 1 – Solution
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A number of files can be found under `~mm3572/unix07/olympics`. These files are related to the olympic games. The file named "years" lists the years and locations of the Olympic games. Each of the other files gives information about one olympic sport.

For each of the following questions, the answer should be given as a single sequence of piped Unix commands. Only the commands described in the first 9 lectures excluding awk (sed is included). The answers should be given in a single ascii file, which is what you will turn in.

0. Browse all the files.

1. Print the year and location of the last ten games excluding the five most recent.

   ```
   i5$ tail -10 years | head -5
   1992    Barcelona, Spain (S)
   1994    Lillehammer, Norway (W)
   1996    Atlanta, United States (S)
   1998    Nagano, Japan (W)
   2000    Sydney, Australia (S)
   ```

2. Winter games are marked with "(W)". Count the number of winter games.

   ```
   i5$ grep \(W\) years | wc -l
         21
   ```

3. List the countries in which the Olympic games have taken place preceded each with the number of times the games have taken place there, in decreasing order.

   ```
   i5$ cut -d, -f2 < years | sed -e 's/ ([WS])//g' -e 's/^ //g' |
   sort | uniq -c | sort -k1nr
      8 United States
      5 France
   ```

```
3 Canada
3 Germany
3 Greece
3 Italy
3 Japan
2 Australia
2 Austria
2 Great Britain
2 Norway
2 Switzerland
1 Belgium
1 China
1 Finland
1 Mexico
1 Netherlands
1 South Korea
1 Spain
1 Sweden
1 USSR
1 Yugoslavia
```

4. List the year, country, and running time of the best marathons in
   increasing running time.

```
i5$ sort -t$'\t' -k3 < marathon | sed -e 's/[a-z,A-Z .-]*, //g'
1984    Portugal        2:09:21.00
1976    East Germany    2:09:55.00
2000    Ethiopia        2:10:11.00
1988    Italy   2:10:47.00
2004    Italy   2:10:55.00
1980    East Germany    2:11:30.00
1964    Ethiopia        2:12:11.20
1972    United States   2:12:19.80
1996    South Africa    2:12:36.00
1992    South Korea     2:13:23.00
1960    Ethiopia        2:15:16.20
1968    Ethiopia        2:20:26.40
1952    Czechoslovakia  2:23:30.20
1956    France  2:25:00.00
1936    Japan   2:29:19.20
```

```
1932    Argentina       2:31:36.00
1920    Finland 2:32:35.80
1928    France  2:32:57.00
1948    Argentina       2:34:51.60
1912    South Africa    2:36:54.80
1924    Finland 2:41:22.60
1906    Canada  2:51:23.65
1908    United States   2:55:18.40
1896    Greece  2:58:50.00
1900    France  2:59:45.00
1904    United States   3:28:53.00
```

5. How many of the best marathons were run in the range of 2:10:00 to 2:30:00?

```
i5$ egrep -c "2:(1|2)" marathon
13
```

6. What year was the fourth year that the best triple-jump exceeded 50 ft?

```
i5$ egrep "5. ft" triple-jump | head -4 | tail -1
1948    Arne Ahman, Sweden      50 ft 6.25 in
```

7. List for each year the country that came first in the long-jump and the person who won in the marathon.

```
i5$ paste long-jump marathon | cut -f1,2,5 |
sed -e 's/[a-zA-Z .]*,//' -e 's/, [a-zA-Z .]*//'
1896    United States  Spiridon Loues
1900    United States  Michel Teato
1904    United States  Thomas Hicks
1906    United States  William J. Sherring
1908    United States  John J. Hayes
1912    United States  Kenneth McArthur
1920    Sweden Hannes Kolehmainen
1924    United States  Albin Stenroos
1928    United States  A. B. El Quafi
1932    United States  Juan Zabala
```

```
1936      United States   Kitei Son
1948      United States   Delfo Cabrera
1952      United States   Emil Zatopek
1956      United States   Alain Mimoun
1960      United States   Abebe Bikila
1964      Great Britain   Abebe Bikila
1968      United States   Mamo Wold
1972      United States   Frank Shorter
1976      United States   Walter Cierpinski
1980      East Germany    Walter Cierpinski
1984      United States   Carlos Lopes
1988      United States   Gelindo Bordin
1992      United States   Hwang Young-Cho
1996      United States   Josia Thugwane
2000      Cuba    Gezahgne Abera
2004      United States   Stefano Baldini
```

8. Which athlete(s) won in more than one sport the same year, and which year?

```
i5$ cat *-* | cut -f1-2 | sed -e 's/, [a-z,A-Z ]*//' |
sort -k1n -k2 | uniq -c | sort -nr | egrep -v "1 "
   2 1988      Carl Lewis
   2 1984      Carl Lewis
   2 1936      Jesse Owens
   2 1904      Myer Prinstein
```

9. How many of the competitions were not won by the United States or Ireland?

```
i5$ cat *-* marathon | egrep -cv "United States| Ireland"
86
```

10. Who is the world record-holder of 800-meter-run?

```
i5$ sort -t$'\t' -k3 < 800-meter-run  | head -1 | cut -f2 |
cut -d, -f1
Vebjoern Rodal
```