Slade Brooks M13801712

Contents

Initialize

```
clear; clc;
```

Problem 5.8

Input times

```
years = [1914 1946 2010 2007 2024];
months = [8 4 9 10 11];
days = [14 18 1 16 12];
hours = [5 14 0 12 17];
mins = [30 0 0 0 0];
secs = [0 0 0 0 0];
```

calculate julian day w/ function from book

convert to combined time

```
uts = hours + mins/60 + secs/3600;

% calc j0s
j0s = J0(years, months, days);

% then determine julian day
jds = j0s + uts/24;
```

output results

```
fprintf("Problem 5.8");
for i=1:length(years)
    fprintf("\nInput:");
    fprintf("\t%g:%g:%g UT on %g/%g/%g", hours(i), mins(i), secs(i), months(i), days(i), years(i));
    fprintf("\nJulian day:");
    fprintf("\t%11.3f\n", jds(i));
end
```

```
Problem 5.8
Input:  5:30:0 UT on 8/14/1914
Julian day:     2420358.729

Input:  14:0:0 UT on 4/18/1946
Julian day:     2431929.083

Input:  0:0:0 UT on 9/1/2010
Julian day:     2455440.500
```

```
Input:  12:0:0 UT on 10/16/2007
Julian day:     2454390.000

Input:  17:0:0 UT on 11/12/2024
Julian day:     2460627.208
```

Problem 5.9

Input times (birthday first, then today)

```
years = [2002 2024];
months = [3 11];
days = [4 12];
hours = [12 12];
mins = [0 0];
secs = [0 0];
```

calculate julian day w/ function from book

convert to combined time

```
uts = hours + mins/60 + secs/3600;

% calc j0s
j0s = J0(years, months, days);

% then determine julian day
jds = j0s + uts/24;
```

determine time between

```
jbday = jds(1);
jtday = jds(2);
days = jtday - jbday;
fprintf("\nProblem 5.9");
fprintf("\n%g days have passed between 12 UTC on my birthday and today\n", days);
```

```
Problem 5.9
8289 days have passed between 12 UTC on my birthday and today
```

Problem 5.10

Input locations and times

```
years = [2008 2007 2005 2006 2006 2024];
months = [1 12 7 2 3 11];
days = [1 21 4 15 21 12];
hours = [12 10 20 3 8 17];
mins = [0 0 0 0 0 0];
secs = [0 0 0 0 0 0];
elds = [18 144 -118+360 -43+360 131 -84+360]; % east long degs (convert west ones to east)
elms = [3 58 15 6 56 30];                     % east long mins
elss = [0 0 0 0 0 31.075];                    % east long mins
```

run local sidereal time function from book

convert to decimals

```
ELs = elds + elms/60 + elss/3600;
uts = hours + mins/60 + secs/3600;
lsts = [0 0 0 0 0];
for i=1:length(years)
    lsts(i) = LST(years(i), months(i), days(i), uts(i), ELs(i));
end
```

output results

```
fprintf("\nProblem 5.10");
for i=1:length(years)
    fprintf("\nInput:");
    fprintf("\t%g:%g:%g UT on %g/%g/%g @ east long=%gdeg %g'", hours(i), mins(i), secs(i), months(i), days(i), years(i), elds(i), elms(i));
    fprintf("\nLocal sidereal time:");
    fprintf("\t%g deg\n", lsts(i));
end
```

```
Problem 5.10
Input:  12:0:0 UT on 1/1/2008 @ east long=18deg 3'
Local sidereal time:    298.572 deg

Input:  10:0:0 UT on 12/21/2007 @ east long=144deg 58'
Local sidereal time:    24.5646 deg

Input:  20:0:0 UT on 7/4/2005 @ east long=242deg 15'
Local sidereal time:    105.176 deg

Input:  3:0:0 UT on 2/15/2006 @ east long=317deg 6'
Local sidereal time:    147.084 deg

Input:  8:0:0 UT on 3/21/2006 @ east long=131deg 56'
Local sidereal time:    70.6348 deg

Input:  17:0:0 UT on 11/12/2024 @ east long=276deg 30'
Local sidereal time:    223.824 deg
```

Published with MATLAB® R2021a