Chapter Review

9-21b Apply: Case Problem 1

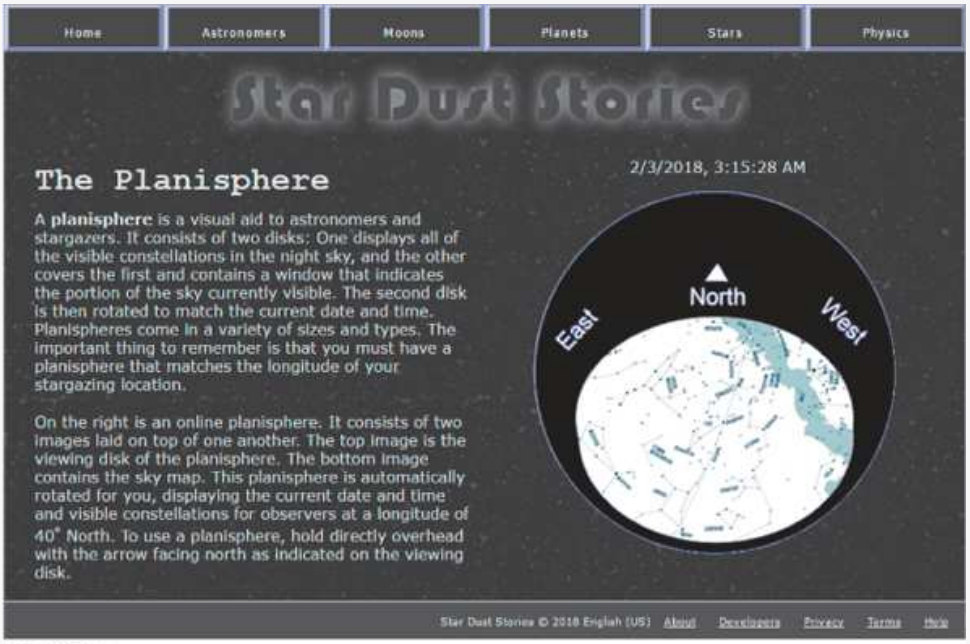
Data Files needed for this Case Problem: sd_map_txt.html, sd_mapper_txt.js, 2 CSS files, 28 PNG files

Star Dust Stories Dr. Andrew Weiss of Thomas & Lee College maintains an astronomy page called *Star Dusk Stories*. One of the tools of the amateur stargazer is a planisphere, which is a handheld device composed of two flat disks: one disk shows a map of the constellations, and the other disk contains a window corresponding to the part of the sky that is visible at a given time and date. When a user rotates the second disk to the current date and time, the constellations that appear in the window correspond to the constellations currently visible in the nighttime sky.

Dr. Weiss has asked for your help in writing a JavaScript program to display a planisphere showing the constellations visible at the current date and time. He has created 24 different sky chart image files, named sd_sky0.png through sd_sky23.png, that represent 24 different rotations of the nighttime sky. He has also created an image containing a transparent window through which a user can view a selected sky chart. A preview of the completed web page is shown in Figure 9-41.

Figure 9-41

Star Dust Stories planisphere



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Complete the following:

1

Use your editor to open the **sd_map_txt.html** and **sd_mapper_txt.js** files from the html09 ► case1 folder. Enter ***your name*** and ***the date*** in the comment section of each file, and save them as **sd_map.html** and **sd_mapper.js** respectively.

2

Go to the **sd_map.html** file in your editor. Directly above the closing `</head>` tag, insert a `script` element that links the page to the sd_mapper.js file. Defer the loading of the script file until after the rest of the web page is loaded by the browser.

3

Study the contents of the file and then save your changes.

4

Go to the **sd_mapper.js** file in your editor. At the top of the file, insert a statement to apply your JavaScript code with strict usage.

5

Declare a variable named **thisTime** containing a `Date` object for February 3, 2018 at 3:15:28 a.m.

6

Use the `toLocaleString()` method to save the text of the thisTime variable in the **timeStr** variable.

7

Change the inner HTML code of the page element with the ID timestamp to the value of the timeStr variable.

8

Next, you will determine which sky map to show in the web page. First, create a variable named **thisHour**, using the `getHours()` method to extract the hour value from the thisTime variable.

9

Create a variable named **thisMonth** using the `getMonth()` method to extract the month number from the thisTime variable.

10

The number of the map to use with the given hour and month is calculated with the formula

(2×*month* + *hour*) % 24

where *month* is the value of the thisMonth variable and *hour* is the value of the thisHour variable. Store the value of this formula in the **mapNum** variable.

11

You will use JavaScript to write the HTML code for the inline element showing the sky image to use in the web page. Create a variable named **imgStr** that stores the following text string

```
<img src='sd_skyMap.png' />
```

where *Map* is the value of the mapNum variable. (*Hint*: Use the + operator to combine text strings together and be sure to include the single quote character within the text strings.)

12

For the page element with the ID planisphere, use the `insertAdjancentHTML()` to insert the value of the imgStr variable directly after the element's opening tag.

13

Add descriptive comments to the file, documenting your work.

14

Save your changes to the file and then open **sd_map.html** in your browser. Verify that your planisphere map and date and time resemble that shown in Figure 9-41.

15

Return to the **sd_mapper.js** file in your editor. Modify the command that creates the thisTime variable so that it uses the current date and time, whatever that may be.

16

Reload sd_map.html in your browser and verify that it shows the current date and time along with the star map for the sky at that moment.