“Introduction to C++ Programming” Online Course

Pretest/Posttest for Class 12

1. The US Weather Service wishes to store hourly temperatures from around the country. Each line in the file contains a five character recording site abbreviation followed by 24 hourly temperatures for the day. They wish to input up to 500 such sites and preform a statistical analysis on the temperatures. Thus, a two dimensional array of temperatures is required. Code the data definitions for the array of site strings and temperatures. Assume that the two arrays are to be called sites and temps and that the following constants are available.

   ```
   const int MAXTEMPS = 24;
   const int MAXSITELEN = 6;
   const int MAXSITES = 500;
   ```

2. Write the prototype for a LoadData function that is passed the two arrays. It should return the actual number of sites loaded into the arrays. The caller codes the following.

   ```
   int numSites = LoadData (sites, temps, MAXSITES);
   ```

3. Write a function, CalcAvgTemp, that is passed a specific site and returns its average temperature for the day. It is called this way.

   ```
   double avg[i] = CalcAvgTemp (temps, i);
   ```

   The above should calculate the average temperature of the day for the $i$th site.

4. Write a function called DisplaySiteAvg that outputs the site name and its average temperature. It is called this way.

   ```
   DisplaySiteAvg (outfile, sites[i], avg[i]);
   ```

5. Write a function called FindRanges. This function calculates the daily high and low temperature for each site in the array and stores them in two passed arrays. It is called this way.

   ```
   double highs[MAXSITES];
   double lows[MAXSITES];
   FindRanges (temps, numSites, highs, lows);
   ```