Introductory C exercises: Pointers, character arrays, and standard I/O

1. Write a single statement or set of statements to accomplish each of the following:

- Define a structure called route containing an int variable routeID, and char array descrp whose values may be as long as 25 characters.
- Define Route to be a synonym for the type struct route.
- Use Route to declare variable route1 to be of type struct route, array longroutes[10] to be of type struct route, and variable routePtr to be of type pointer to struct route.
- Read a route id and description from the keyboard into the individual members of variable route1.
- Assign the member values of variable route1 to element 3 of array longroutes.
- Assign the address of array longroutes to the pointer variable routePtr.
- Print the members values of element 3 of array longroutes to the display using the variable routePtr and the structure pointer operator to refer to the members.

2. Assume the following variables have been declared as shown:

```
double taxrate = 7.3, discountrate;
char buyer[100], seller[100];
```

- Declare the variable tmpPtr to be a pointer to a variable of type double.
- Assign the address of variable taxrate to pointer variable tmpPtr.
- Print the value of the variable pointed to by tmpPtr to the display.
- Assign the value of the variable pointed to by tmpPtr to variable discountrate.
- Print the value of discountrate to the display.
- Print the address of taxrate to the display.
- Print the address stored in tmpPtr to the display.
- Is the value printed the equal to the address of taxrate?
- Set the value of character array buyer to a string of your choosing.
- Copy the string stored in character array buyer into character array seller.
- Compare the string stored in character array buyer with the string in character array seller, and print the result to the display.
- Append the string in character array seller to the string in character array buyer. Will this cause a run-time error?
- Determine the length of the string stored in character array buyer, and print the result to the display.