

OLI Assignment Pgs. 34-38

As you read the following OLI pages and complete the interactive activities, capture the screenshots of the completed activities and replace the respective screenshots in the document.

- Page 34 Program-specific data type via struct
- Page 35 Use struct object as parameters
- Page 37 Collecting data from a file
- Page 38 Batch processing using loops

When you are ready to submit the assignment, download the document in PDF and submit the PDF file on Cougar Course as the proof for your work.

Page 34 Program-specific data type via struct

Hotspot struct definition

What characters does a struct definition use to enclose member declarations?

- ☐ ()
- ☒ { }
- ☐ []

✓ Correct.

Which of the following follow the common coding convention for a struct data type name?

- ☒ Item
- ☐ item
- ☐ Items

✓ Correct, struct data type names typically start with an uppercase letter and use singular rather than plural terms.

True or False: The semicolon after } is optional.

- ☒ False
- ☐ True

✓ Correct, we are not allowed to omit the semicolon after }.

Here is an example composite data type defined using the struct mechanism. It could be used by a program tracking sales items.

```
struct Item {  
    string item_name;  
    string store_name;  
    double cost;  
}; //don't forget the semicolon
```

What is the name of the data type?

✓ Correct, the name of the data type is after the keyword struct.

How many data members does the Item composite data type have?

✓ Correct! The three data members are item_name, store_name, and cost.

Checkpoint struct examples

What other struct examples can you think of? Describe a couple struct data types of your choice and their respective members.

One example I can think of is by color with the respective members of their name, rgb numbers, popularity.

Resubmit

✓ Thanks for sharing.

What are some apps that you think may have utilized structs to organize their data?

Every social media apps

Resubmit

✓ Thanks for sharing.

LBD access struct object

Given the following struct definition and variable declaration.

```
struct Song {  
    string song_title;  
    string artists;  
    int ranking_last_week;  
};  
  
int main() {  
    Song top_hit;  
}
```

Which of the following should be used to replace the _____ below?

_____ = "Someone you love";

- ☒ top_hit.song_title
- ☐ Song.song_title
- ☐ song_title

✓ Correct!

Complete the following call to the `getline` function with appropriate arguments to collect the `artists` information for the `top_hit` object.

`getline(cin ,` `top_hit.artists` `);`

✓ Correct! `top_hit.artists` is good.

Mark all acceptable values to replace the ____ below;

`top_hit.ranking_last_week = _____;`

- ☐ "Lover"
- ☒ 5
- ☒ 10
- ☐ "Taylor Swift"

Check My Answer

✓ Correct, only `int` values are accepted for the `ranking_last_week` member.

What would be displayed by the above statement `CA` ;

✓ Correct!

Which of the following would declare a new object of the State data type?

- ☐ `home_state my_favorite;`
- ☐ `my_favorite = home_state;`
- ☐ `my_favorite State;`
- ☒ `State my_favorite;`

✓ Correct.

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Page 35 use struct objects as parameters

Hotspot struct object as parameter

Complete the following to determine the number of seconds since midnight for the end time of the task.

`to_seconds(` `end` `);`

✓ Correct!

Hotspot collect_time

Complete the following function to collect the end time for the task:

collect_time()

✓ Correct, the parameter is expecting a Clock object.

In your own words, explain what would happen if we had used pass-by-value for the Clock parameter in collect_time.

It won't update the time you would hope it would, it would instead replace the value completely from the beginning or end from the main function.

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✓ The data collected in the function will not affect the start or end object in the main function.

What questions do you have about using `struct` parameters?

None.

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✓ Thank you for sharing.

What aha moments would you like to share?

None.

Resubmit

✓ Thank you for sharing.

Page 37 Collecting data from a file

MR applications working with files

What are some other software applications that work with reading from files?

Java

Resubmit

✓ Thanks for sharing.

LBD open and close an input file

Which of the following would properly associate the ifstream object with the file chosen by the user?

- ☐ file_name.open(input_file);
- ☒ input_file.open(file_name);
- ☐ open(input_file, file_name);

✓ Correct; the ifstream object should be before the dot operator.

```
ifstream first("names.txt");  
ifstream second("labels.txt");
```

Given the above declaration, which of the following should be used when we are done getting data from the

"names.txt" file?

✓ Correct.

LBD the extraction operator >>

Given the above code segment and the following content of the "input.dat" file

10/31

Complete the following questions.

What would be stored in `month` if the data type for month is `char`?

- ☐ '10'
- ☒ '1'

✓ Correct; the `>>` operator extracts only one character for a char variable.

What would be stored in `month` if the data type for month is `string`?

- ☒ "10/31"
- ☐ "10"
- ☐ "10/"

✓ Correct; a string variable can hold both digits and `/`.

What would be stored in `month` if the data type for month is `int`? 10

✓ Correct!

```
fin >> month >> delimiter >> day;
```

In order for the above statement to extract 10 into month and 31 into day, what should be the data type for each of the following variables?

`int` month;

`char` delimiter;

`int` day;

✓ Correct, this would extract 10 into month.

✓ Correct, this would extract and store `'/'` into delimiter.

✓ Correct, this would extract and store 31 into day.

LBD the getline function

Which of the following would extract and store the area code "800" of the above phone number into the variable `first`?

- ☐ `getline(fin, first, '5');`
- ☒ `getline(fin, first, '-');`
- ☐ `getline(fin, first);`
- ☐ `getline(fin, first, '0');`

✓ Correct; this would store "800" into `first` and discard `-`.

8005551234

Given the above data file, what would be stored in `first` and `second` after the following statements?

```
getline(fin, first, '5');  
getline(fin, second);
```

first: "800"

second: "551234"

✓ Correct. The `getline` function will store all characters before 5 and discard the first 5.

✓ Correct. The first `getline` function only extracted one 5.

Albany,New York;

Given the above content of the input data file, which characters should be used in the following `getline` function calls in order to store "Albany" into variable `first` and "New York" into variable `second`.

`getline(fin, first, comma);`

`getline(fin, second, semicolon);`

✓ Correct, the semicolon is used to mark the end of the state.

✓ Correct, the data file uses a comma to mark the end of the city.

CA 92096

Given the above data file, which character should be used in the following `getline` function call to store "CA" into `first`.

`getline(fin, first, space);`

✓ Correct. the data file uses a space to mark the end of CA.

LBD collect data for a song

Mark all of the following would be able to extract 18 and store it in `a_song.ranking_this_week`?

- ☐ `getline(input_file, a_song.ranking_this_week, '$');`
- ☐ `getline(input_file, a_song.ranking_this_week);`
- ☒ `input_file >> a_song.ranking_this_week;`

Check My Answer

✓ Correct, since `ranking_this_week` is an int data type, we cannot use `getline` to extract and store data.

```
input_file >> a_song.ranking_this_week;  
getline(input_file, a_song.artists)
```

Given the above statements to process the input file, what would be stored in `a_song.artists`?

- ☐ `"Blinding Lights~The Weeknd,16#"`
- ☐ `"Blinding Lights"`
- ☒ `"$Blinding Lights~The Weeknd,16#"`

✓ Correct, the reading cursor will stop at `$` after the `>>` operator extracts 18. The `getline` function with two arguments will extract all remaining text till the end of the line.

In the following space, write the statements you would create to extract the appropriate values into their respective data members of `a_song`.

```
getline(input_file, a_song.title)
```

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✓ Thanks for sharing.

Page 38 batch processing using while loops

Hotspot songs input file

Which of the following would store 1 into s.ranking_this_week?

- ☐ `getline(fin, s.ranking_this_week, ',');`
- ☒ `fin >> s.ranking_this_week;`

✓ Correct

Would the above input statement extract and discard the comma after 1?

- ☒ No
- ☐ Yes

✓ Correct.

To skip over the comma after 1, we can use `fin.ignore()`.

Now we are ready to get the song title. Which of the following would work?

- ☒ `getline(fin, s.title, ',');`
- ☐ `getline(fin, s.title);`
- ☐ `fin >> s.title;`

✓ Correct.

Would the above input statement extract and discard the comma after Loved?

- ☐ No
- ☒ Yes

✓ Correct.

LBD counter-based loop

Which of the following in the code segment collect the first number in the input file?

- ☐ `input_file >> a_song.ranking_this_week;`
- ☒ `input_file >> num_songs;`
- ☐ `input_file >> >> a_song.ranking_last_week;`

✓ Correct, this statement extracts the value 3 from the input file and stores it in the variable num_songs.

How many times will the statement `counter++` be executed?

✓ Incorrect, the statement will be executed as many times as the value of num_songs.

What would be the value of counter after the loop is done?

✓ Incorrect, when counter has the same value as num_songs, the loop condition becomes false and the loop is done.

What would happen if we move `input_file >> num_songs` from before the loop into loop body?

Nothing would work or infinite, not quite sure.

Resubmit

✓ Thanks for sharing.

Hotspot collect_song

If we rearrange the order of the data for each song to the following:

```
1,3,Someone You Loved,Lewis Capaldi  
2,1,Truth Hurts,Lizzo  
3,2,Senorita,Shawn Mendes & Camila Cabello
```

Would you feel comfortable adjusting the collect_song function? Why or why not?

not quite yet, just need more practice and really familiarize myself with it more.

Resubmit

✓ Thanks for sharing.

If we change the arrangement of the data to the following:

```
1 3  
Someone You Loved  
Lewis Capaldi  
2 1  
Truth Hurts  
Lizzo  
3 2  
Senorita  
Shawn Mendes & Camila Cabello
```

Would you feel comfortable adjusting the collect_song function? Why or why not?

Not quite yet, just need more practice and really familiarize myself with it more.

Resubmit

✓ Thanks for sharing.

LBD sentinel-based loop

Would the program still work for the given input data file if we change the loop condition to a `song.rating` `this_week` `== -999`?

- ☒ No
☐ Yes

✓ Correct, this would stop the loop after the first song is processed.

Would the program still work for the given input data file if we change the loop condition to a `song.rating` `this_week` `> 0`?

- ☒ No
☐ Yes

✓ Correct, this would stop the loop after the first song is processed.

What questions or tips do you have regarding the use of sentinel values to mark the end of an input file.

None.

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✓ Thanks for sharing.

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My Response

Writing code is not the only thing software developers do. Part of their responsibilities also include identifying and organizing data to be processed by their programs.

Describe some data you would be interested in working with.

Not sure yet what specifically I'm interested in.

Resubmit

✓ Thank you for sharing.

Provide a sample structured input file to show how you could structure these data to support batch processing.

N/A

Resubmit

✓ Thanks for sharing.