

# **Assignment 4 – BCS 426 C# Programming**

**Due: 4/15/2020 @ 1:40pm**

You will need to submit two Visual Studio solutions for this assignment. When you submit the assignment in the Blackboard dropbox make sure you zip both solutions and submit them.

IMPORTANT – Make sure you ***properly comment*** AND ***properly indent*** your program. The commenting and indenting documents are on Blackboard in the “Handouts” folder. ***If you fail to properly comment or properly indent I will deduct points.***

***VERY IMPORTANT – IF THE PROGRAM DOES NOT COMPILE THERE WILL BE MAJOR POINTS TAKEN OFF.***

## ***Overview***

You will be writing a GUI front end for the payroll application.

## ***Part 1 – WPF Project***

Create a **WPF application project in Visual Studio**. This project should import your DLL solution. DO NOT COPY THE DEFINITION OF ANY CLASSES INTO THIS SOLUTION, IMPORT THE DLL SOLUTION!!!

The GUI should have the following functionality:

### **Main Window**

This application will use a Windows Presentation Foundation (WPF) GUI to display payroll data. The main window for the application should contain a member variable for Department. The member variable should be loaded with data when

the Open button is pressed (see specifications below). The controls in the window should then be populated with data from the Department instance.

Here is a screenshot before opening a file:

The screenshot shows a window titled "Hwk4-PayrollGUI-v1 - Arthur Hoskey". The interface includes the following elements:

- Department Filename:** A text input field.
- Open Department JSON File:** A button.
- Department Name:** A text input field.
- Total Worker Hours:** A text input field.
- Total Worker Pay:** A text input field.
- Workers:** A table with columns "Name", "Id", and "Pay Rate".
- Shifts:** A table with columns "Worker Id", "Hours Worked", and "Date".
- Target Worker Id:** A text input field.
- Find Worker:** A button.
- Worker Name:** A text input field.
- Worker Id:** A text input field.
- Worker Pay Rate:** A text input field.
- Worker Hours:** A text input field.
- Worker Pay:** A text input field.

Here is a screenshot after opening a file:

Hwk4-PayrollGUI-v1 - Arthur Hoskey

Department Filename

Department Name

Total Worker Hours

Total Worker Pay

Workers

Name	Id	Pay Rate
Rose Diaz	100	50
James Allen	101	25
Richard Murphy	102	10
Patricia Jones	103	20
John Young	104	25
Barbara Williams	105	30
Elizabeth Davis	106	40
Jennifer Brown	107	25

Shifts

Worker Id	Hours Worked	Date
100	7	1/1/2020 12:00:00 AM
100	8	1/2/2020 12:00:00 AM
100	5	1/3/2020 12:00:00 AM
100	6	1/4/2020 12:00:00 AM
101	7	1/3/2020 12:00:00 AM
101	6	1/4/2020 12:00:00 AM
101	6	1/5/2020 12:00:00 AM
101	8	1/6/2020 12:00:00 AM

Target Worker Id

Worker Name

Worker Id

Worker Pay Rate

Worker Hours

Worker Pay

## Window Control Descriptions

- Department Filename TextBox – Contains the name of the currently open department JSON file. This TextBox should be **read only** (cannot type inside of it).
- Open Department JSON File Button – See event handling details below.
- Department Name TextBox – Contains the name of the department (from the Department instance). This TextBox should be **read only** (cannot type inside of it).
- Total Worker Hours TextBox – Contains the total worker hours for all workers combined (from the Department instance). This TextBox should be **read only** (cannot type inside of it).
- Workers ListView – Contains worker data (from the Department instance).
- Shifts ListView – Contains shift data (from the Department instance).
- Target Worker Id TextBox – User should type in a worker id they want to see data for.

- Worker Name, Worker Id, Worker Pay Rate, Worker Hours, Worker Pay TextBoxes – These should be filled with data for the target worker id when the Find Worker button is pressed.

## Event Handling

- Find Worker. When the user presses this button it should get data for the target worker id and populate the TextBoxes to the right accordingly (data should come from the Department instance). If the worker id is not found the TextBoxes should just be cleared. The worker TextBoxes should all be **read only** (cannot type inside of them).

Here is a screenshot after pressing the Find Worker button:

The screenshot shows the Hwk4-PayrollGUI-v1 application window. The 'Department Filename' is set to 'D:\School\Classes\BCS 426\Programs\2020-02\Hwk4-PayrollGUI-v1\Hwk4-PayrollGUI-v1\bin\Debug\dept.json'. The 'Open Department JSON File' button is visible. The 'Department Name' is 'Technical Support'. The 'Total Worker Hours' is 614 and the 'Total Worker Pay' is 21645. The 'Workers' table lists 7 workers: Rose Diaz (Id: 100, Pay Rate: 50), James Allen (Id: 101, Pay Rate: 25), Richard Murphy (Id: 102, Pay Rate: 10), Patricia Jones (Id: 103, Pay Rate: 20), John Young (Id: 104, Pay Rate: 25), Barbara Williams (Id: 105, Pay Rate: 30), Elizabeth Davis (Id: 106, Pay Rate: 40), and Jennifer Brown (Id: 107, Pay Rate: 25). The 'Shifts' table lists 8 shifts: 100 (7 hours, 1/1/2020 12:00:00 AM), 100 (8 hours, 1/2/2020 12:00:00 AM), 100 (5 hours, 1/3/2020 12:00:00 AM), 100 (6 hours, 1/4/2020 12:00:00 AM), 101 (7 hours, 1/3/2020 12:00:00 AM), 101 (6 hours, 1/4/2020 12:00:00 AM), 101 (6 hours, 1/5/2020 12:00:00 AM), and 101 (8 hours, 1/6/2020 12:00:00 AM). The 'Target Worker Id' is 113. The 'Find Worker' button is pressed. The worker details are populated: Worker Name is Susan Wilson, Worker Id is 113, Worker Pay Rate is 50, Worker Hours is 22, and Worker Pay is 1100.

Name	Id	Pay Rate
Rose Diaz	100	50
James Allen	101	25
Richard Murphy	102	10
Patricia Jones	103	20
John Young	104	25
Barbara Williams	105	30
Elizabeth Davis	106	40
Jennifer Brown	107	25

Worker Id	Hours Worked	Date
100	7	1/1/2020 12:00:00 AM
100	8	1/2/2020 12:00:00 AM
100	5	1/3/2020 12:00:00 AM
100	6	1/4/2020 12:00:00 AM
101	7	1/3/2020 12:00:00 AM
101	6	1/4/2020 12:00:00 AM
101	6	1/5/2020 12:00:00 AM
101	8	1/6/2020 12:00:00 AM

Target Worker Id: 113

Find Worker

Worker Name: Susan Wilson

Worker Id: 113

Worker Pay Rate: 50

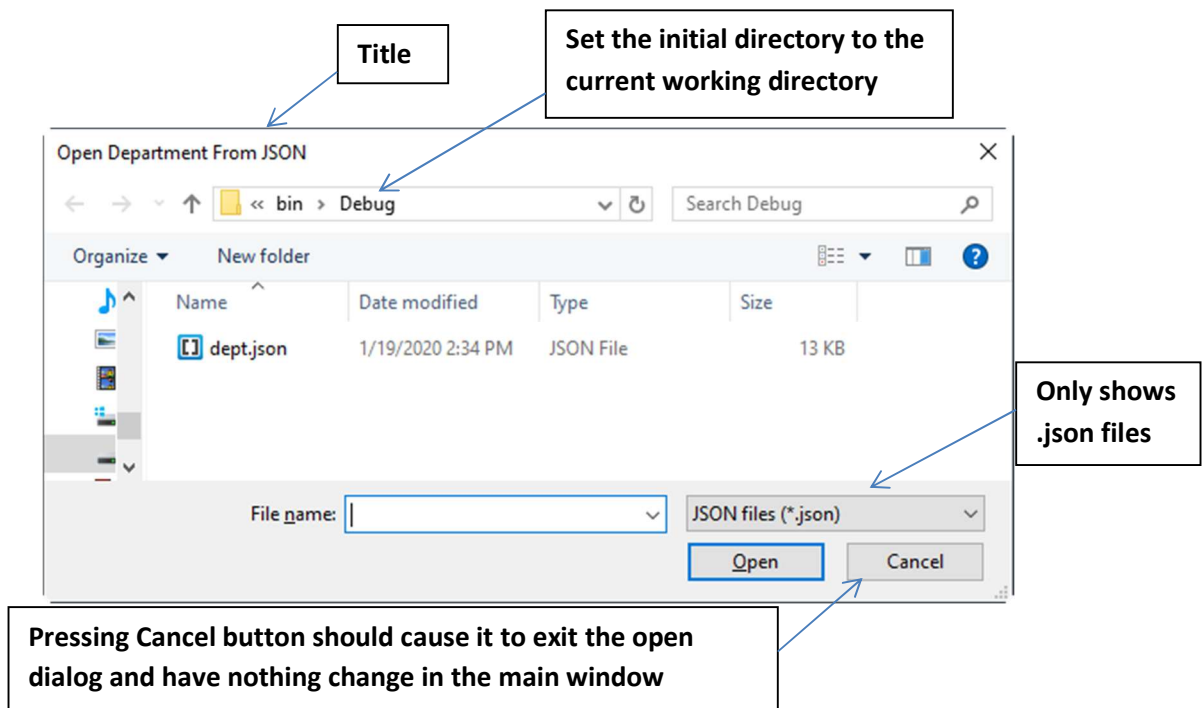
Worker Hours: 22

Worker Pay: 1100

- Open Department JSON File button. When the user presses this button it should display an open file dialog and let the user select the file to open.
  - This open file dialog should only show files with a .json extension.

- Set the initial directory that the dialog opens in to the current working directory.
- Set the open dialog title to something similar to what you see in the screenshot below.
- If the user presses cancel in the open file dialog nothing should change in the window.
- If the user chooses to open the file then it should do the following:
  - Populate the department controls with data from the selected file (deserialize into the Department member variable first then fill the controls).
  - **Clear the worker TextBoxes (the controls used by Find Worker).**
  - The filename should also appear in the department filename TextBox in the main window (see main window screenshot).

Here is a screenshot of the Department JSON open file dialog:



## More Specifications

- Window Title. The window title should be similar to the one in the main window screenshot except it should contain your name (instead of mine).
- Control Stretching - Horizontal. When resizing the window horizontally the right edges of the controls on the right side of the window should “stretch” to match the width of the window. For example:

The window is resized larger horizontally. The above mentioned controls should “stretch” to stay at the edge of the window.

For example:

Hwk4-PayrollGUI-v1 - Arthur Hoskey

Department Filename: D:\School\Classes\BCS 426\Programs\2020-02\Hwk4-PayrollGUI-v1\Hwk4-PayrollGUI-v1\bin\Debug\dept.json

Open Department JSON File

Department Name: Technical Support

Total Worker Hours: 614

Total Worker Pay: 21645

Workers

Name	Id	Pay Rate
Rose Diaz	100	50
James Allen	101	25
Richard Murphy	102	10
Patricia Jones	103	20
John Young	104	25
Barbara Williams	105	30
Elizabeth Davis	106	40
Jennifer Brown	107	25

Shifts

Worker Id	Hours Worked	Date
100	7	1/1/2020 12:00:00 AM
100	8	1/2/2020 12:00:00 AM
100	5	1/3/2020 12:00:00 AM
100	6	1/4/2020 12:00:00 AM
101	7	1/3/2020 12:00:00 AM
101	6	1/4/2020 12:00:00 AM
101	6	1/5/2020 12:00:00 AM
101	8	1/6/2020 12:00:00 AM

Target Worker Id: 113

Find Worker

Worker Name: Susan Wilson

Worker Id: 113

Worker Pay Rate: 50

Worker Hours: 22

Worker Pay: 1100



The right edges of the controls (at the right edge of the window) should stretch with the window when resizing horizontally

Hwk4-PayrollGUI-v1 - Arthur Hoskey

Department Filename: D:\School\Classes\BCS 426\Programs\2020-02\Hwk4-PayrollGUI-v1\Hwk4-PayrollGUI-v1\bin\Debug\dept.json

Open Department JSON File

Department Name: Technical Support

Total Worker Hours: 614

Total Worker Pay: 21645

Workers

Name	Id	Pay Rate
Rose Diaz	100	50
James Allen	101	25
Richard Murphy	102	10
Patricia Jones	103	20
John Young	104	25
Barbara Williams	105	30
Elizabeth Davis	106	40
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100	5	1/3/2020 12:00:00 AM
100	6	1/4/2020 12:00:00 AM
101	7	1/3/2020 12:00:00 AM
101	6	1/4/2020 12:00:00 AM
101	6	1/5/2020 12:00:00 AM
101	8	1/6/2020 12:00:00 AM

Target Worker Id: 113

Find Worker

Worker Name: Susan Wilson

Worker Id: 113

Worker Pay Rate: 50

Worker Hours: 22

Worker Pay: 1100

**Challenge!** (you don't have to do this item if you don't want to, it is just for fun): Use a Converter in the Date column of the Shift ListView to show a formatted date (without the time). Here is a screenshot of what it should look like:

Hwk4-PayrollGUI-v1 - Arthur Hoskey

Department FilenameD:\School\Classes\BCS 426\Programs\2020-02\Hwk4-PayrollGUI-v1\Hwk4-PayrollGUI-v1\bin\Debug\dept.json

Open Department JSON File

Department NameTechnical Support

Total Worker Hours614

Total Worker Pay21645

Workers

Name	Id	Pay Rate
Rose Diaz	100	50
James Allen	101	25
Richard Murphy	102	10
Patricia Jones	103	20
John Young	104	25
Barbara Williams	105	30
Elizabeth Davis	106	40
Jennifer Brown	107	25

Shifts

Worker Id	Hours Worked	Date
100	7	1/1/2020
100	8	1/2/2020
100	5	1/3/2020
100	6	1/4/2020
101	7	1/3/2020
101	6	1/4/2020
101	6	1/5/2020
101	8	1/6/2020

Target Worker Id

Find Worker

Worker Name

Worker Id

Worker Pay Rate

Worker Hours

Worker Pay