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| **Test Case#** | **Purpose of Test Case** | **Input Data** | **Expected Output** |
| **1** | This test case uses the GUI to test if full-time employees are added if all fields are properly filled. | Name: “John Smith”  Department: CS  Type: Fulltime  Date Hired: 02/24/2021  Annual Salary: 54000  Select “Add Employee” | GUI will print “Employee Added.” |
| **2** | This test case uses the GUI to test if part-time employees are added if all fields are properly filled. | Name: “John Smith”  Department: CS  Type: Parttime  Date Hired: 02/24/2021  Hourly Pay: 39.9  Select “Add Employee” | GUI will print  “Employee Added.” |
| **3** | This test case uses the GUI to test if management employees are added if all fields are properly filled.   * Case 1: Management Role is manager for new employee * Case 2: Management Role is department head for new employee * Case 3: Management Role is director for new employee for new employee | Name: “John Smith”  Department: CS  Type: Management  Management Role: Manager  Date Hired: 02/24/2021  Annual Salary: 85000  Select “Add Employee”  Name: “John Smith”  Department: ECE  Type: Management  Management Role: Department Head  Date Hired: 02/24/2021  Annual Salary: 85000  Select “Add Employee”  Name: “John Smith”  Department: IT  Type: Management  Management Role: Director  Date Hired: 02/24/2021  Annual Salary: 85000  Select “Add Employee” | GUI will print  “Employee Added.”  GUI will print  “Employee Added.”  GUI will print  “Employee Added.” |
| **4** | This test case uses the GUI to verify that duplicate employees are not added to the database. | Name: “John Smith”  Department: CS  Type: Management  Management Role: Manager  Date Hired: 02/24/2021  Annual Salary: 85000  Select “Add Employee”  Name: “John Smith”  Department: CS  Type: Management  Management Role: Manager  Date Hired: 02/24/2021  Annual Salary: 85000  Select “Add Employee” | GUI will print “Employee Added.”  GUI will print “Employee is already in the list” |
| **5** | This test case is to ensure that the program rejects any non-numerical and numerical input in the annual salary text field for full time employees.   * Case 1: Annual salary is a non-numerical input * Case 2: Annual salary is a negative number | Name: “John Smith”  Department: CS  Type: Fulltime  Date Hired: 02/24/2021  Annual Salary: “Zero”  Select “Add Employee”  Name: “John Smith”  Department: CS  Type: Fulltime  Date Hired: 02/24/2021  Annual Salary: -1  Select “Add Employee” | GUI will print “Salary or hourly pay must be a number.”  GUI will print "Salary or hourly pay cannot be negative.” |
| **6** | This test case is to ensure that the program rejects any non-numerical and negative input in the hourly pay text field for part-time employees.   * Case 1: Hourly pay is a non-numerical input * Case 2: Hourly pay is a negative number | 1.Name: “John Smith”  Department: CS  Type: Parttime  Date Hired: 02/24/2021  Hourly Pay: “Thirty”  Select “Add Employee”  2.Name: “John Smith”  Department: CS  Type: Parttime  Date Hired: 02/24/2021  Hourly Pay: -1  Select “Add Employee” | GUI will print “Salary or hourly pay must be a number.”  GUI will print "Salary or hourly pay cannot be negative.” |
| **7** | This test case is to ensure that the date entered is valid. Since the date is selected from a menu, the only possible invalid dates are future dates. | Name: “John Smith”  Department: CS  Type: Management  Management Role: Manager  Date Hired: 04/24/2022  Annual Salary: 39.9  Select “Add Employee” | GUI will print “04/24/2022” is not a valid date!” |
| **8** | This test case is to ensure that an employee will not be added to the database if any of the required fields is missing.   * Case 1: Full-time employee with missing annual salary * Case 2: Part-time employee with missing hourly pay * Case 3: Management employee with missing annual salary | Name: “John Smith”  Department: CS  Type: Fulltime  Date Hired: 02/24/2021  Annual Salary: Empty  Select “Add Employee”  Name: “John Smith”  Department: CS  Type: Parttime  Date Hired: 02/24/2021  Hourly Pay: Empty  Select “Add Employee”  Name: “John Smith”  Department: CS  Type: Fulltime  Date Hired: 02/24/2021  Annual Salary: Empty  Select “Add Employee” | GUI should disable “Add Employee” Button until all of the required fields are filled in depending on each employee type. |
| **9** | This test case is to ensure that the Set Hours successfully sets the hours of an employee with properly filled data fields. | Name: “John Smith”  Department: CS  Type: Parttime  Date Hired: 02/24/2021  Hourly Pay: 39.9  Select “Add Employee”  Name: “John Smith”  Department: CS  Type: Parttime  Date Hired: 02/24/2021  Hours Worked: 40  Select “Set Hours” | GUI will print “Employee added.”  GUI will print “Working hours set.”` |
| **10** | This test case is to ensure that trying to set hours for an employee not in the database will not be allowed, and instead prints an error. | Name: “John Smith”  Department: CS  Type: Parttime  Date Hired: 02/24/2021  Hours Worked: 40  Select “Set Hours” | GUI will print “Employee doesn’t exist.” |
| **11** | This test case is to verify that the Set Hours option does not allow out of bounds working hours.   * Case 1: Hours worked is a negative input * Case 2: Hours worked exceeds 100 hours | Name: “John Smith”  Department: CS  Type: Parttime  Date Hired: 02/24/2021  Hourly Pay: 39.9  Select “Add Employee”  1.Name: “John Smith”  Department: CS  Type: Parttime  Date Hired: 02/24/2021  Hours Worked: -1  Select “Set Hours”  2.Name: “John Smith”  Department: CS  Type: Parttime  Date Hired: 02/24/2021  Hours Worked: 101  Select “Set Hours” | GUI will print “Employee added.”  GUI will print  “Working hours cannot be negative.”  GUI will print  “Invalid Hours: over 100” |
| **12** | This test case is to ensure that the Set Hours option does not allow non-integer values for Hours Worked.   * Case 1: Hours worked is a double input * Case 2: Hours worked is a String input | Name: “John Smith”  Department: CS  Type: Parttime  Date Hired: 02/24/2021  Hourly Pay: 39.9  Select “Add Employee”  1.Name: “John Smith”  Department: CS  Type: Parttime  Date Hired: 02/24/2021  Hours Worked: 20.5  Select “Set Hours”  2.Name: “John Smith”  Department: CS  Type: Parttime  Date Hired: 02/24/2021  Hours Worked: “Ten”  Select “Set Hours” | GUI will print “Employee added.”  GUI will print  “Number of hours must be a whole number.”  GUI will print  “Number of hours must be a whole number.” |
| **13** | This test case is to ensure that only part-time employees can have their hours set. | Name: “John Smith”  Department: CS  Type: Fulltime  Date Hired: 02/24/2021  Annual Salary: 54000  Select “Add Employee”  Name: “John Smith”  Department: CS  Type: Parttime  Date Hired: 02/24/2021  Hours Worked: 30  Select “Add Employee” | GUI will print “Employee added.”  GUI will print “Employee is not a parttime employee.” |
| **14** | This test case is to ensure that the “Remove Employee” Button successfully removes the employee from the database.   * Case 1: Instance of management employee is added then removed from the database. * Case 2: Instance of full time employee is added then removed from the database. * Case 3: Instance of part time employee is added then removed from the database. | 1.Name: “John Smith”  Department: CS  Type: Management  Management Role: Manager  Date Hired: 02/24/2021  Annual Salary: 85000  Select “Add Employee”  Name: “John Smith”  Department: CS  Date Hired: 02/24/2021  Select “Remove Employee”  2.Name: “John Smith”  Department: ECE  Type: Fulltime  Date Hired: 02/24/2021  Annual Salary: 85000  Select “Add Employee”  Name: “John Smith”  Department: ECE  Date Hired: 02/24/2021  Select “Remove Employee”  3.Name: “John Smith”  Department: IT  Type: Parttime  Date Hired: 02/24/2021  Hourly Pay: 39.9  Select “Add Employee”  Name: “John Smith”  Department: IT  Date Hired: 02/24/2021  Select “Remove Employee” | GUI will print “Employee added.”  GUI will print “Employee removed.”  GUI will print “Employee added.”  GUI will print “Employee removed.”  GUI will print “Employee added.”  GUI will print “Employee removed.” |
| **15** | This test case is to ensure that the program notifies the user when an employee that does not exist is trying to be removed. | Name: “John Smith”  Department: CS  Date Hired: 02/24/2021  Select “Remove Employee” | GUI will print “Employee doesn’t exist” |
| **16** | This test case is to verify that the database of employees can be successfully printed by their department via the print drop down menu. | Name: “John Smith”  Department: CS  Type: Fulltime  Date Hired: 02/24/2021  Annual Salary: 54000  Select “Add Employee”  Name: “Joe Jones”  Department: ECE  Type: Fulltime  Date Hired: 01/19/2020  Annual Salary: 54000  Select “Add Employee”  Name: “Bob Saget”  Department: CS  Type: Fulltime  Date Hired: 02/24/2019  Annual Salary: 54000  Select “Add Employee”  Switch to Employee Database tab  Select Print > Print by Department | GUI will print “Employee added.”  GUI will print “Employee added.”  GUI will print “Employee added.”  GUI will print “--Printing earning statements by department--  Bob Saget::CS::02/24/2021::Payment $0.00::FULL TIME::Annual Salary $54,000.00  John Smith::CS::02/24/2021::Payment $0.00::FULL TIME::Annual Salary $54,000.00  Joe Jones::ECE::01/19/2020::Payment $0.00::FULL TIME::Annual Salary $54,000.00” |
| **17** | This test case is to verify that the database of employees can be successfully printed by the date hired via the print drop down menu. | Name: “John Smith”  Department: CS  Type: Fulltime  Date Hired: 02/24/2021  Annual Salary: 54000  Select “Add Employee”  Name: “Joe Jones”  Department: ECE  Type: Fulltime  Date Hired: 01/19/2020  Annual Salary: 54000  Select “Add Employee”  Name: “Bob Saget”  Department: CS  Type: Fulltime  Date Hired: 02/24/2019  Annual Salary: 54000  Select “Add Employee”  Switch to Employee Database tab  Select Print > Print by DateHired | GUI will print “Employee added.”  GUI will print “Employee added.”  GUI will print “Employee added.”  GUI will print “--Printing earning statements by date hired--  Joe Jones::ECE::01/19/2020::Payment $0.00::FULL TIME::Annual Salary $54,000.00  Bob Saget::CS::02/24/2021::Payment $0.00::FULL TIME::Annual Salary $54,000.00  John Smith::CS::02/24/2021::Payment $0.00::FULL TIME::Annual Salary $54,000.00” |
| **18** | This test case is to verify that the database of employees can be successfully printed in its current state via the print drop down menu. | Name: “John Smith”  Department: CS  Type: Fulltime  Date Hired: 02/24/2021  Annual Salary: 54000  Select “Add Employee”  Name: “Joe Jones”  Department: ECE  Type: Fulltime  Date Hired: 01/19/2020  Annual Salary: 54000  Select “Add Employee”  Name: “Bob Saget”  Department: CS  Type: Fulltime  Date Hired: 02/24/2019  Annual Salary: 54000  Select “Add Employee”  Switch to Employee Database tab  Select Print > Print | GUI will print “Employee added.”  GUI will print “Employee added.”  GUI will print “Employee added.”  GUI will print “--Printing earning statements for all employees--  John Smith::CS::02/24/2021::Payment $0.00::FULL TIME::Annual Salary $54,000.00  Joe Jones::ECE::01/19/2020::Payment $0.00::FULL TIME::Annual Salary $54,000.00  Bob Saget::CS::02/24/2021::Payment $0.00::FULL TIME::Annual Salary $54,000.00” |
| **19** | This test is to ensure that the Print function will not display any employees if given an empty list. | Switch to Employee Database tab  Select Print > Print | GUI will print “Database is empty.” |
| **20** | This test is to verify that the Compute Payment function works as intended for each employee type. | Name: “John Smith”  Department: CS  Type: Fulltime  Date Hired: 02/24/2021  Annual Salary: 54000  Select “Add Employee”  Name: “John Smith”  Department: ECE  Type: Parttime  Date Hired: 02/24/2021  Hourly Pay: 39.9  Hours Worked: 20  Select “Add Employee”  Select “Set Hours”  Name: “John Smith”  Department: IT  Type: Management  Role: Manager  Date Hired: 02/24/2021  Annual Salary: 54000  Select “Add Employee”  Switch to Employee Database tab  Select Print > Print | GUI will print “Employee added.”  GUI will print “Employee added.”  GUI will print “Employee added.”  GUI will print “--Printing earning statements for all employees--  John Smith::CS::02/24/2021::Payment $2,076.92::FULL TIME::Annual Salary $54,000.00  John Smith::ECE::02/24/2021::Payment $798.00::PART TIME::Hourly Rate $39.90::Hours worked this period: 20  John Smith::IT::02/24/2021::Payment $2,269.23::FULL TIME::Annual Salary $54,000.00::Manager Compensation $192.31” |
| **21** | This test is to verify that the user can successfully import an external database into the Employee Database. | Switch to the Employee Database tab  Select File > Import  Select database.txt in the file explorer  Select Print > Print | GUI will print “Employee database successfully imported.”  GUI will print “--Printing earning statements for all employees--  Jane Doe::CS::07/01/2020::Payment $0.00::PART TIME::Hourly Rate $45.90::Hours worked this period: 0  John Doe::CS::06/30/2019::Payment $0.00::FULL TIME::Annual Salary $76,430.00  Charlie Brown::CS::04/30/2019::Payment $0.00::FULL TIME::Annual Salary $56,000.00  Amy Harrison::IT::03/31/2020::Payment $0.00::FULL TIME::Annual Salary $69,000.00  Eric Haskell::IT::09/01/2015::Payment $0.00::FULL TIME::Annual Salary $101,000.00::DepartmentHead Compensation $365.38  Sunny White::IT::02/28/2016::Payment $0.00::FULL TIME::Annual Salary $89,300.00::Manager Compensation $192.31  Henry Young::IT::02/01/2005::Payment $0.00::FULL TIME::Annual Salary $120,000.00::Director Compensation $461.54  Bob Scanlan::ECE::05/12/2019::Payment $0.00::PART TIME::Hourly Rate $24.59::Hours worked this period: 0  Jeff Clinton::ECE::10/01/2001::Payment $0.00::PART TIME::Hourly Rate $39.99::Hours worked this period: 0  Carey Wang::ECE::11/30/2017::Payment $0.00::PART TIME::Hourly Rate $26.59::Hours worked this period: 0” |
| **22** | This test is to verify that a user can successfully export a created database to .txt format. | Name: “John Smith”  Department: CS  Type: Fulltime  Date Hired: 02/24/2021  Annual Salary: 54000  Select “Add Employee”  Switch to Employee Database tab  Select File > export | GUI will print “Employee successfully added”  Program will export a file titled “export.txt” that contains “John Smith::CS::02/24/2021::Payment $0.00::FULL TIME::Annual Salary $54,000.00” |
| **23** | This test is to ensure the Export function will not export an empty file when the database contains no employees. | Switch to Employee Database tab  Select File > export | GUI will print “Database is empty.” |