Task: Payroll system

Consider: Number of staff, number of hours per staff, pay rates, staff seniority

Team member types: Junior, Senior, Contracted

Types of pay: Per hour, salaried, commissioned

Problems to fix: Overbudgeting projects typically 10% to 35% higher

**Outputs**

* **Total number of staff on the payroll**
* **Total amount of salary to the senior staff**
* **Total salary for the salaried staff**
* **Total wages for the contract staff**
* **Total payroll bill**
* **Minimum and maximum (10% and 35%) extra cost for delays**

**Prepopulate a staff list**

Project Status

* Ongoing
* Closed

Department List

* Research
* Developer
* Analyst
* Marketing

Grade

* Junior
* Senior
* Contracted

Project List

* FortDay
* MeTube
* ArachnidBoy
* WhosApp
* Macrosoft Play
* Non-Project

**Company Details to add**

Salaried Staff will have a method to calculate bonus

Contracted Staff will have a method to calculate pay

Assuming 8 hours work days – 5 days a week for salary calculations

**Console Design**

**HR Login Page**

Welcome to the login page

1. Login
2. Forgot Password
3. Register

**Login Page**

Please enter your username and Password

“Username”: “”

“Password”: “”

**Forgot Password**

Please enter your username and secret answer for confirmation

“Enter your username”: “”

“Secret Question?” : ”Secret Answer”

**Confirmed Reset Password**

Hello “username”

“Enter password”

“Confirm password”

**Register**

“Enter Username”

“Enter Password”

“Confirm Password”

“Choose Secret Question”

1: “What is your dream country to live in?”

2: “What is your favourite colour?”

3: “What is your favourite game?”

“Enter number of choice: ”

“What is your answer?”

PRIORITY

**HR project Management Menu**

Welcome to the project Management Menu

What would you like to do?

1. View Full Staff on Project List
2. Update Staff List
3. Total Cost and Breakdown Costs of Employees
4. View Active Projects details
5. Update Projects
6. Exit Program

**View Full Staff List Page**

This is the details of staff on projects

Staff ID – First Name – Last Name - Grade - Department – Current Project– Hourly Pay

000000 – John – Apple - Contracted – Developer – FortDay - £20

000001 – Samantha – Green - Junior – Analyst – MeTube - £30

233567 – Javir – Santiago - Senior – Research – ArachnidBoy - £40

723432 – Claire – Helio - Contracted – Marketing – WhosApp – £25

…

**Update Full Staff List Page**

This is the full staff list page

What would you like to do?

1. Add staff
2. Remove staff
3. Update Staff Detail
4. Return to Project Management Menu

**Update Full Staff List Page::Pre-Add Staff**

You are about to add a new staff member which requires

* 6 Digit Staff ID
* First Name
* Last Name
* Grade
* Department
* Current Project
* Type of Staff
* Hourly Pay

Please Selected an Option

1. Continue
2. Return to Update Full Staff List Page
3. Return to Project Management Menu

**Update Full Staff List Page::Pre-Add Staff::Add Staff**

Assign a 6 Digit Staff ID:

Enter First Name:

Enter Last Name:

Assign Grade

1. Junior
2. Senior
3. Contracted

Assign Department

1. Research
2. Developer
3. Analyst
4. Marketing

Assign a Project

1. FortDay
2. MeTube
3. ArachnidBoy
4. WhosApp
5. Macrosoft Play
6. Non-Project

Assign Hourly Pay:

**Update Full Staff List Page::Remove Staff**

Enter the Staff ID you would like to remove:

The selected staff is

Staff ID – First Name – Last Name - Grade - Department – Current Project– Hourly Pay

000000 – John – Apple - Contracted – Developer – FortDay - £20

Are you sure?

1. Yes
2. No

**Update Full Staff List Page::Update Staff Detail**

Enter the Staff ID you would like to update:

The selected staff is

Staff ID – First Name – Last Name - Grade - Department – Current Project– Hourly Pay

000000 – John – Apple - Contracted – Developer – FortDay - £20

What would you like to update?

1. First Name
2. Last Name
3. Grade
4. Department
5. Current project
6. Hourly Pay

**Total Cost and Breakdown Costs of Employees**

The total number of staff employed:

The total cost of staff employed:

The average cost per staff per year:

The total number of SENIOR staff employed:

The total cost of SENIOR staff employed per year:

The average cost per SENIOR staff per year:

The total number of JUNIOR staff employed:

The total cost of JUNIOR staff employed per year:

The average cost per JUNIOR staff per year:

The total number of CONTRACTED staff employed:

The total cost of CONTRACTED staff employed per year:

The average cost per CONTRACTED staff per year:

**View active projects details**

Please select a project

1. FortDay
2. MeTube
3. ArachnidBoy
4. WhosApp
5. Macrosoft Play
6. Non-Project

**View active projects details::Project Selected**

Project Name – Project Length (days)– Project Fee – Raw Employee Cost – Forecasted Delay Cost –Forecasted Total Cost - Status

Fortday – 90 - £50000 - £35000 - £3500 to £12250 - £38500 to £47250 - Ongoing

Staff on Project

Staff ID – First Name – Last Name - Grade - Department – Current Project– Cost on Project

000000 – John – Apple - Contracted – Developer – FortDay - £10000

…

**Update active projects details**

1. Select Project
2. Add New Project
3. Remove Project from List
4. Return to Project Details
5. Return to Management Menu

**Update active projects details::Select Project**

1. FortDay
2. MeTube
3. ArachnidBoy
4. WhosApp
5. Macrosoft Play

**Update active projects details::Select Project::Selected Project**

**//Reassign staff on the update staff page**

Selected Project: FortDay

Project Details:

Project Name – Project Length (days)– Project Fee – Raw Employee Cost – Forecasted Delay Cost –Forecasted Total Cost - Status

Fortday – 90 - £50000 - £35000 - £3500 to £12250 - £38500 to £47250 – Ongoing

Staff on Project

Staff ID – First Name – Last Name - Grade - Department – Current Project– Cost on Project

000000 – John – Apple - Contracted – Developer – FortDay - £10000

…

What would you like to Update?

1. Project Length
2. Project Fee
3. Project Status
4. (Staff Reassignment between non-project)
5. Return to view project details

**PSEUDO CODE**

* **HR Project Management Menu**
  1. OUTPUT Welcome Message AND Options
     1. View Full Staff on Project List
     2. Update Staff List
     3. Total Cost and Breakdown Costs of Employees
     4. View Active Projects details
     5. Update Projects
     6. Exit Program
  2. INPUT User Choice
  3. GO TO User Choice Screen
* **View Full Staff on Project List Screen**
  1. OUTPUT Screen description
  2. PROCESS Data
     1. READ From Staff Details CSV
     2. STORE Details from CSV in arrays/vectors
  3. OUTPUT Data to screen
  4. OUTPUT Press 1 To return to HR Project Management Menu
  5. INPUT 1 to return to HR Project Management Menu
* **Update Staff List Screen**
  1. OUTPUT Screen Description
  2. OUTPUT Options
     1. Add staff
        1. INPUT Staff ID
        2. INPUT First Name
        3. INPUT Last Name
        4. INPUT Job Grade
        5. INPUT Department
        6. INPUT Project Assignment
        7. INPUT Annual Pay
        8. STORE as Class/structure
        9. APPEND to Staff CSV
     2. Remove staff
        1. INPUT Staff ID
        2. READ From Staff CSV
        3. OUTPUT Staff Details
        4. INPUT Confirmation
        5. REMOVE from Staff CSV
     3. Update Staff Details
        1. INPUT Staff ID
        2. OUTPUT List of details type to update
        3. INPUT User Choice
        4. UPDATE Staff CSV
     4. Return to HR Project Management Menu
  3. INPUT User Choice
  4. GO TO User Choice Screen
* **Total Cost and Breakdown Costs of Employees Screen**
  1. OUTPUT Screen Description
  2. PROCESS Data
     1. READ Number of lines from staff CSV(-HeadersLine) and Salaries
     2. STORE in a vector structure
     3. READ Salary and associated Job Grade
     4. STORE in a vector structure
     5. CALCULATE Total Salaries from Vector Structure
     6. STORE as variable
  3. OUTPUTS
     1. Total number of staff on the payroll
     2. Total amount of salary to the senior staff
     3. Total salary for the salaried staff
     4. Total wages for the contract staff
     5. Total payroll bill
  4. OUTPUTS Press 1 To return to HR Project Management Menu
  5. INPUT 1 to return to HR Project Management Menu
* **Active Projects Details Screen**
  1. OUTPUT Screen Description
  2. OUTPUT Project List to Select From
  3. INPUT User Choice
  4. GO TO Project Details
* **Project Details Selected Screen**
  1. OUTPUT Screen Description
  2. PROCESS Data
     1. READ From Project CSV
     2. STORE Project Details in a structure
     3. READ From Employee CSV
     4. SEARCH For employees under that project
     5. STORE Employee Details
     6. CALCULATE Cost of Employee with Project Duration
  3. OUTPUT Project Details
     1. OUTPUTS Minimum and maximum (10% and 35%) extra cost for delays
* **Update Projects List Screen**
  1. OUTPUT Screen Description
  2. OUTPUT Options
     1. Select Project
        + INPUT Project Name
        + READ From Project CSV
        + OUTPUT List of Details updateable
        + INPUT user choice of detail to update
        + UPDATE Project CSV
        + RETURN to Update Projects List Screen
     2. Add New Project
        + INPUT Project Name
        + INPUT Project Length
        + INPUT Project Fee
        + INPUT Project Status
        + STORE as class/struct
        + APPEND to Project CSV
     3. Remove Project from List
        + INPUT Project Name
        + DELETE row from Project CSV
        + READ From Employee CSV
        + UPDATE Project Name to “Non-Project”
     4. Return to Project Details
     5. Return to Management Menu
  3. INPUT User Choice
  4. GO TO User Choice Screen