



# HR Management System

Project A2

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ID: 1588

Section (19)

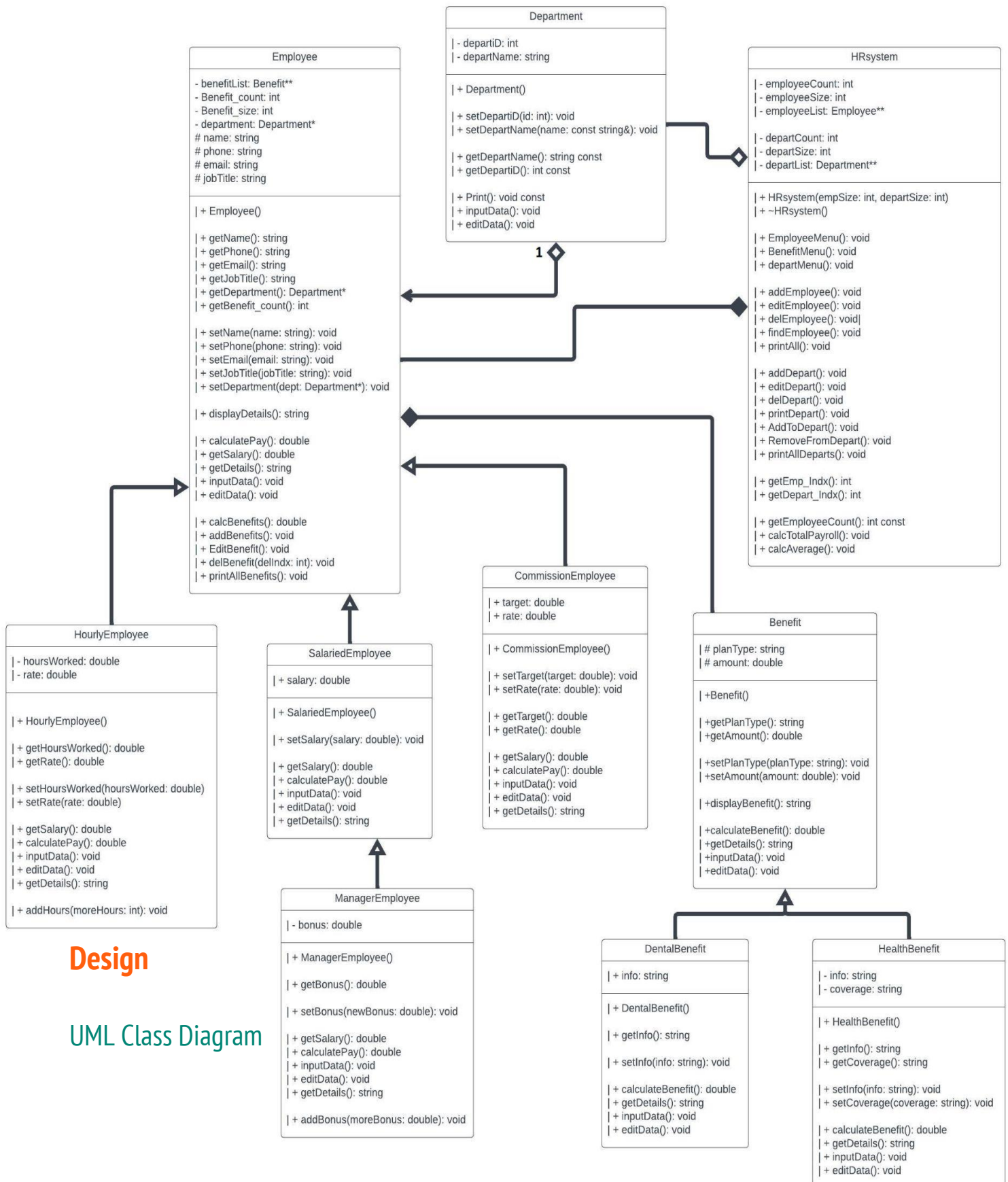
## Introduction

### Overview

This is a simple HR (Human Resources) Management System program written in C++. It includes an HRsystem class that manages employee information, benefits, and departments. The program provides a menu-based interface to interact with the HRsystem object and perform various operations such as adding employees, calculating payroll, calculating average salaries, etc.

### Specifications

Overall, this HR Management System program provides a basic framework for managing employee information and benefits, and it can be extended to include more features as needed.



## Underlying Data Structure

The Hr system class uses an array to store Employees and Departments. If the user deletes an object, The program removes a specific object and shifts all subsequent objects. However, this approach is not optimal as it requires  $n$  time for each deletion operation., and it restricts the user from adding more clients than the size of the array.

to solve these problems, a better solution for inserting and deleting Employees or departments would be to use a linked list. Although accessing elements in a linked list takes  $O(n)$  time, a hash table provides efficient access time takes  $O(1)$  time, making it a better option.

## Menu features

1. Employee Menu: This option allows the user to add, remove, and search with each attribute employees have or modify employee information such as name, phone number, email, job title, hours worked, and salary.
2. The "Benefit Menu" provides the following options: search for employees, display all employees along with their indexes, choose an employee index to edit, add ( set health or dental benefits for the selected employee), remove benefits, edit benefits, and print all benefits associated with the employee.
3. Department Menu: This option allows the user to
  - a. add, remove, or modify department information such as name and id.
  - b. Print all departments in the system.
  - c. Print all employees in a specific department after entering its department id.
  - d. Add Employee to Department (change employee department pointer to the department with id u entered)
  - e. Remove Employee from Department (change employee department pointer to NULL)
4. Print All: This option displays all employee information stored in the HR system object.
5. Calculate Payroll: This option calculates the total payroll.
  - a. for all employees in the system.
  - b. For the employees in a specific department.
6. Calculate Average Salaries: This option calculates the average salaries also
  - a. for all employees in the system.
  - b. For the employees in a specific department.

## Testing

### Screenshots

"C:\Users\Mohie Elden\Desktop\OOP.A2\bin\Debug\OOP.exe"

Emp ( 1 ) \*\*\*\*\*

Name: ahmed

TEST#1

Phone: 011

Email: ahmed@gmail.com

Job Title: programmer

-----

have ( 0 )Benefits

-----

-----> Type: Commission Employee

Target: 40.000000, Rate: 40.000000

Total Salary: \$1600.000000

\*\*\*\*\*

Emp ( 2 ) \*\*\*\*\*

Name: mohy

Phone: 012

Email: mohy@yahoo.com

Job Title: programmer

-----

have ( 0 )Benefits

-----

-----> Type: Salaried Employee

Salary: \$2000.000000

\*\*\*\*\*

Emp ( 3 ) \*\*\*\*\*

Name: abdo

Phone: 015

Email: abdo@hotmail.com

Job Title: doctor

-----

have ( 0 )Benefits

-----

-----> Type: Manager Employee

bonus: 400.000000

salary: \$1500.000000

Total Salary: \$1900.000000

\*\*\*\*\*

Emp ( 4 ) \*\*\*\*\*

Name: mona

Phone: 010

Email: mona@gmail.com

Job Title: engineer

-----

have ( 0 )Benefits

-----

The action performed is adding four employees with distinct types and subsequently selecting the "printAll" option..



"C:\Users\Mohie Elden\Desktop\OOP.A2\bin\Debug\OOP.exe"

(1) -Calculate Payroll Menu :

-----  
1. For Department

2. All Employees

0. Exit Menu

Enter your choice: 2

Total payroll: \$6100

TEST#2

Choosing calculate payroll then choosing  
all employees.

"C:\Users\Mohie Elden\Desktop\OOP.A2\bin\Debug\OOP.exe"

(1) -Calculate Average Salaries Menu :

-----

1. For Department

2. All Employees

0. Exit Menu

Enter your choice: 2

Average Salaries: \$1525

TEST#3

Choosing calculate average then

choosing all employees





"C:\Users\Mohie Elden\Desktop\OOP.A2\bin\Debug\OOP.exe"

(1) -Department Menu :

- 
- 1. Add Department
- 2. Edit Department
- 3. Delete Department
- 
- 4. Print Department Employees
- 5. Print All Departments
- 
- 6. Add Employee to Department
- 7. Remove Employee from Department
- 8. Exit Menu

Enter your choice: 5

Department ( 1 ) \*\*\*\*\*

Department ID: 1

Department Name: first

\*\*\*\*\*

Department ( 2 ) \*\*\*\*\*

Department ID: 2

Department Name: second

\*\*\*\*\*

found (2) departs.

TEST#4

The action performed is adding 2 Departments and subsequently selecting the "print All Departments" option..



"C:\Users\Mohie Elden\Desktop\OOP.A2\bin\Debug\OOP.exe"

(1) -Department Menu :

- 1. Add Department
- 2. Edit Department
- 3. Delete Department
- 4. Print Department Employees
- 5. Print All Departments
- 6. Add Employee to Department
- 7. Remove Employee from Department
- 8. Exit Menu

Enter your choice: 4

Enter Department ID: 1

Emp ( 1 ) \*\*\*\*\*

Name: mohy

Phone: 012

Email: mohy@yahoo.com

Job Title: programmer

-----> Type: Salaried Employee

Salary: \$2000.000000

\*\*\*\*\*

Emp ( 2 ) \*\*\*\*\*

Name: mona

Phone: 010

Email: mona@gmail.com

Job Title: engineer

-----> Type: Hourly Employee

Hours Worked: 60.000000

Hourly Rate: \$10.000000

Total Salary: \$600.000000

\*\*\*\*\*

found (2) employees.

TEST#5

Adding mohy and mona to the  
department With ID (1) then printing  
these department employees Note  
that the sum of their salaries equals  
2600.



"C:\Users\Mohie Elden\Desktop\OOP.A2\bin\Debug\OOP.exe"

(1) -Benefit Menu :

- 1. Add Benefit
- 2. Edit Benefit
- 3. Delete Benefit
- 4. print All Benefit for this employee
- 0. Exit Menu

Enter your choice: 4

benefit ( 1 ) \*\*\*\*\*

Plan Type: 1

Amount: \$100.000000

-----

Health Benefit Information: 1

Coverage: 1

Calculated Benefit Amount: \$20.000000

\*\*\*\*\*

benefit ( 2 ) \*\*\*\*\*

Plan Type: 2

Amount: \$100.000000

-----

Dental Benefit Information: 2

Calculated Benefit Amount: \$10.000000

\*\*\*\*\*

TEST#6


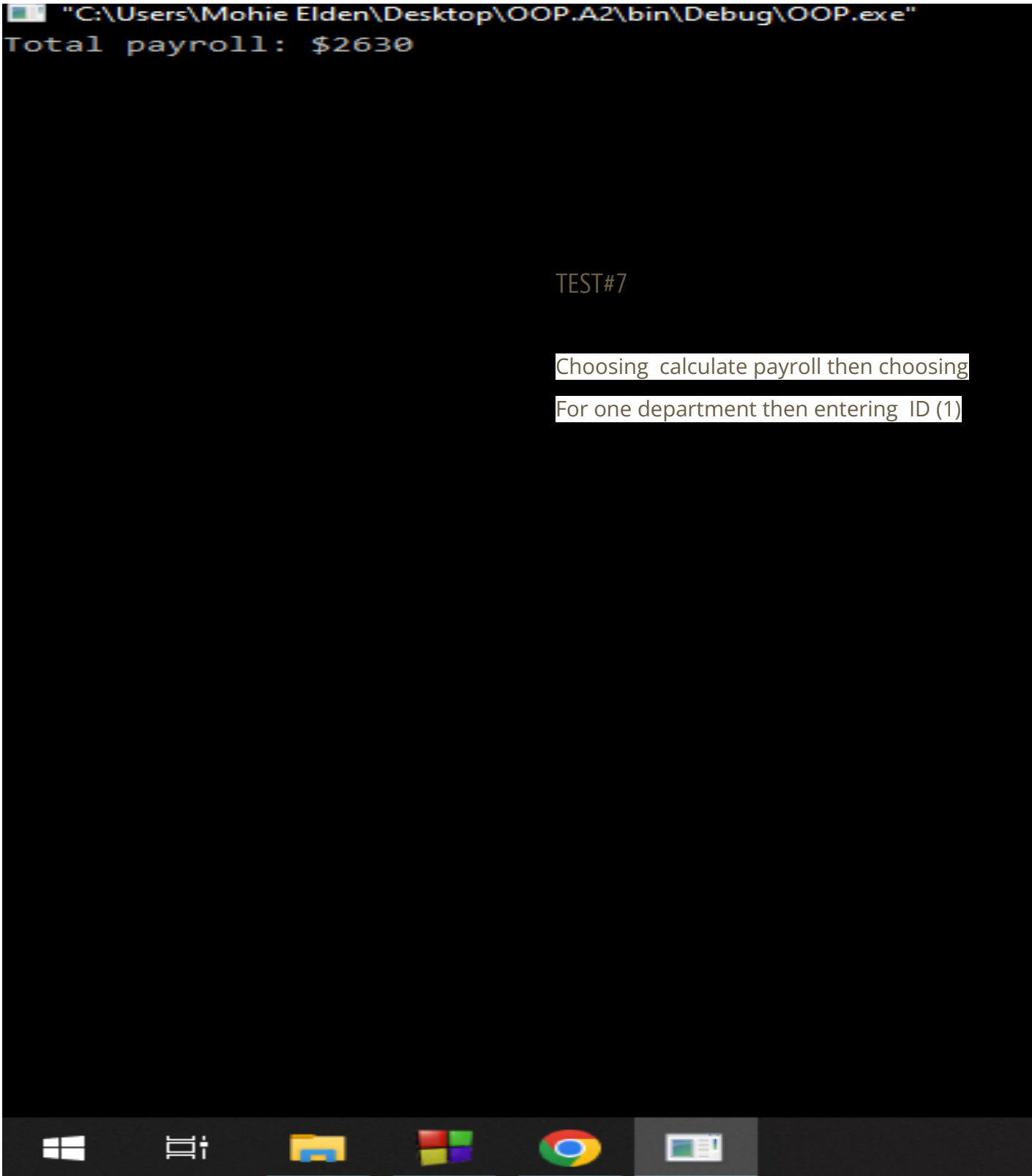
Adding two benefits with different types

To employee mohy now its total payroll

Is 2030

And department total payroll is 2630.



```
"C:\Users\Mohie Elden\Desktop\OOP.A2\bin\Debug\OOP.exe"  
Total payroll: $2630
```

TEST#7

Choosing calculate payroll then choosing

For one department then entering ID (1)

```
"C:\Users\Mohie Elden\Desktop\OOP.A2\bin\Debug\OOP.exe"
Emp ( 1 ) *****
Department ID: 2
Department Name: second      TEST#8
Name: ahmed
Phone: 011
Email: ahmed@gmail.com
Job Title: programmer
-----
have ( 0 )Benefits
-----
----> Type: Commission Employee
Target: 40.000000, Rate: 40.000000
Total Salary: $1600.000000
*****
Emp ( 2 ) *****
Department ID: 1
Department Name: first
Name: mohy
Phone: 012
Email: mohy@yahoo.com
Job Title: programmer
-----
have ( 2 )Benefits
-----
----> Type: Salaried Employee
Salary: $2000.000000
*****
Emp ( 3 ) *****
Name: abdo
Phone: 015
Email: abdo@hotmail.com
Job Title: doctor
-----
have ( 0 )Benefits
-----
----> Type: Manager Employee
bonus: 400.000000
salary: $1500.000000
Total Salary: $1900.000000
*****
Emp ( 4 ) *****
Department ID: 1
Department Name: first
Name: mona
```

Notice change when we choose print all

Now For employee mohy.



## Test Cases

**Used test case that add four employees.**

1

1

1

ahmed

011

ahmed@gmail.com

programmer

40

40

1

2

mohy

012

mohy@yahoo.com

programmer

2000

1

3

abdo

015

abdo@hotmail.com

doctor

1500

400

1

4

mona

010

mona@gmail.com

engineer

60

10

## Conclusion

In conclusion, the HR system program is an essential tool for managing employees and their benefits efficiently. It provides various options for adding, editing, and deleting employees and their benefits, allowing for easy management of HR tasks.



**The End**