

## HW03 – Class Constructors, Inheritance & Init [100 pts]

- a. Create a date class with attributes of month, day, and year.
- b. Create an employee class for storing information related to employee information for the CS1C Corporation. This class should contain the employee's name, employee's Id, phone number, age, gender, job title, salary, and hire date.
  1. You should write a series of member functions that change the employee's name, employee's Id, phone number, age, job title, salary, and hire date.
  2. You should use your date class (composition) when accessing hire date.
  3. You should write a print function that prints all information related to an employee.
  4. You should write a client to test **all** your member functions. Print the **before and after** when testing your change functions. You should write at least two different constructors (default and non-default).
- c. Create the following classes:
  1. Programmer class that is derived from the employee class with the following private data members
    - i. Department number
    - ii. Supervisor's name
    - iii. Percentage of last salary increase
    - iv. A C++ identifier (true if the employee knows C++)
    - v. A Java identifier (true if the employee knows Java)
  2. Software architect class that is derived from the employee class with the following private data members
    - i. Department number
    - ii. Supervisor's name

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- iii. Percentage of last salary increase
  - iv. Years of experience designing software projects
3. You should write at least two different constructors (default and non-default) for the classes above.
  4. You should write a series of member functions that change the private data members of the derived classes.
  5. You should write a print function that prints all information related to the Programmer class and the Software architect class.
  6. You should write a client to test **all** your member functions. Print the **before and after** when testing your change functions.

One should be able to follow your output without looking at your source code.

Data:

C1SCEmployees

| Name            | Employee's Id | Phone        | Age | Gender | Job title      | Salary    | Hire Date  |
|-----------------|---------------|--------------|-----|--------|----------------|-----------|------------|
| Jimmy Fallon    | 12345         | 949-555-1234 | 40  | M      | Comedian       | \$100,000 | 8/31/2014  |
| Stephan Colbert | 12346         | 310-555-5555 | 51  | M      | Comedian       | \$70,123  | 05/08/2015 |
| James Corden    | 87654         | 703-703-1234 | 37  | M      | Talk Show Host | \$900,000 | 12/25/2014 |
| Katie Couric    | 77777         | 203-555-6789 | 58  | F      | News reporter  | \$500,500 | 03/01/2005 |

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### Programmers

| Name         | Employee's Id | Phone        | Age | Gender | Job title  | Salary    | Hire Date  |
|--------------|---------------|--------------|-----|--------|------------|-----------|------------|
| Sam Software | 54321         | 819-123-4567 | 21  | M      | Programmer | \$223,000 | 12/24/2011 |
| Mary Coder   | 65432         | 310-555-5555 | 28  | F      | Programmer | \$770,123 | 02/08/2010 |

| Name         | Department | Supervisor's Name | Raise % | C++ Knowledge | Java Knowledge |
|--------------|------------|-------------------|---------|---------------|----------------|
| Sam Software | 5432122    | Joe Boss          | 4       | Yes           | No             |
| Mary Coder   | 6543222    | Mary Leader       | 7       | Yes           | Yes            |

### Software Architects

| Name           | Employee's Id | Phone        | Age | Gender | Job title | Salary    | Hire Date  |
|----------------|---------------|--------------|-----|--------|-----------|-----------|------------|
| Alex Arch      | 88888         | 819-123-4444 | 31  | M      | Architect | \$323,000 | 12/24/2009 |
| Sally Designer | 87878         | 310-555-8888 | 38  | F      | Architect | \$870,123 | 02/08/2003 |

| Name           | Department | Supervisor's Name | Raise % | Years of experience |
|----------------|------------|-------------------|---------|---------------------|
| Alex Arch      | 5434222    | Big Boss          | 5       | 4                   |
| Sally Designer | 6543422    | Big Boss          | 8       | 11                  |

In your client,

1. Create at least one "employee" object with the default constructor
2. Create at least one "employee" object with the non-default constructor
3. Create at least one "programmer" object with the default constructor
4. Create at least one "programmer" object with the non-default constructor
5. Create at least one "software architect" object with the default constructor

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6. Create at least one "software architect" object with the non-default constructor
7. Write code to test changing the data members of a CS1CEmployee
8. Write code to test changing the data members of a Programmer class
9. Write code to test changing the data members of a Software Architect class

Use the command script to capture your interaction compiling and running the program, including all operations, as shown below:

CS1C Summer 2019 MTWTH HW03 100pts **Due: Th 6/20/2019**

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/03 $ script hw03.scr
```

```
Script started, file is hw03.scr
```

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/03 $ date
```

```
...
```

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/03 $ ls -l
```

```
...
```

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/03 $ make all
```

```
...
```

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/03 $ ls -l
```

```
...
```

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/03 $ ./hw03
```

```
... // print out employee, programmer, architect objs instantiated  
via default & alternate constructors
```

```
... // print out employee, programmer, architect objs both before  
and after changing class data via testing code
```

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/03 $ exit
```

```
Script done, file is hw03.scr
```

## HW03 - Class Constructors, Inheritance & Init [100 pts]

cs1c@cs1c-VirtualBox ~/cs1c/hw/03 \$ make tar

...

Submit the tar package file hw03.tar by Thursday June 20, 2019.