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| **Programming 2**  Diploma in IT / DS / CSF  Year 1 (2021/22) Semester 2 | Week **6** |
| **2 hours** |
| **Practical 6 : Abstract Classes and Interfaces (Advanced)** | |

**Objectives**

At the end of this practical, the students should be able to:

* implement Abstract Classes and Interfaces

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| **IMPORTANT**   * Create a folder, **week06.** * Create a new Console App (.NET Core) project, **Snnnnnnnn\_EmployeeApp**, in the **Week06** folder created above *(note:* ***Snnnnnnnn*** *is your Student Number)*. * At the end of the session, copy the folder **Week06** folder (which contains all your work) to PRG2 network folder: **\\ictspace.ict.np.edu.sg\PRG2**. |

**Advanced**

The class diagram for an application is given below.

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| ***Employee*** |
| -id:int  -name:string |
| +Employee()  +Employee(int,string)  *+CalculatePay():double*  +ToString():string |

|  |  |  |
| --- | --- | --- |
| **FullTimeEmployee** |  | **PartTimeEmployee** |
| -basicPay:double  -allowance:double |  | -dailyRate:double  -daysWorked:int |
| +FullTimeEmployee()  +FullTimeEmployee(int,string,double,double)  +CalculatePay():double  +ToString():string |  | +PartTimeEmployee()  +PartTimeEmployee(int,string,double,int)  +CalculatePay():double  +ToString():string |

* The (monthly) pay of a full time employee is calculated as shown below:

pay = basic pay + allowance

* The (monthly) pay of a part-time employee is calculated as shown below:

pay = days worked x daily rate

1. Create a Console project **Snnnnnnnn\_EmployeeApp** in Visual Studio 2019.
2. Implement the **Employee** class.
3. Implement the **FullTimeEmployee** class.
4. Implement the **PartTimeEmployee** class.
5. Write code in the superclass to implement the interface IComparable<T> so that the program can sort objects according to id.
6. Write code in the Main method of Program class to do the following:
7. create an employeeList to store FullTimeEmployee and PartTimeEmployee objects. Using the information below, create 2 objects and add them to employeeList.

|  |  |  |
| --- | --- | --- |
| employee1 | FullTimeEmployee | Id: 103  Name: John  Basic pay: 1500  Allowance: 100 |
| employee2 | PartTimeEmployee | Id: 101  Name: Mary  Daily rate: 50  Days worked: 10 |

1. sort employeeList by id.
2. display all the objects in employeeList using the ToString() method (using a for or foreach loop).

**Plagiarism Warning:**

**If a student is found to have submitted work not done by him/her, he/she will not be awarded any marks for this practical. Disciplinary action may also be taken.**

**Similar action will be taken for student who allows other student(s) to copy his/her work.**