```
package com.mycompany.assignment3;

public abstract class Employee {

    private String firstName;
    private String lastName;
    private String SSN;
    private Date birthDate;

    public Employee(String firstName, String lastName,
            String SSN, Date birthDate) {
        this.firstName = firstName;
        this.lastName = lastName;
        this.SSN = SSN;
        this.birthDate = birthDate;
    }

    public Date getBirthDate(){
        return birthDate;
    }

    @Override
    public String toString() {
        return "Employee{" + "FirstName= " + firstName +
                ", LastName= " + lastName + ", SocialSecurityNumber= " + SSN + "}";
    }

    public abstract double earnings();

}
```

```
package com.mycompany.assignment3;

public class Date {

    private int day;
    private int month;
    private int year;

    public Date(int day, int month, int year) {
        this.day = day;
        this.month = month;
        this.year = year;
    }

    public int getDay() {
        return day;
    }

    public int getMonth() {
        return month;
    }

    public int getYear() {
        return year;
    }

}
```

```java
package com.mycompany.assignment3;

public class HourlyEmployee extends Employee {

    private int wage;
    private int hours;

    public HourlyEmployee(int wage, int hours,
            String firstName, String lastName, String SSN, Date birthDate) {
        super(firstName, lastName, SSN, birthDate);
        this.wage = wage;
        this.hours = hours;
    }

    @Override
    public String toString() {
        return "HourlyEmployee{" + "Hourly Wage=" + wage +
                ", Hours Worked=" + hours + '}'+super.toString();
    }

    @Override
    public double earnings() {
        double earning = 0;
        if (hours <= 40) {
            earning = wage * hours;
        } else if (hours > 40) {
            earning = (40 * wage) + (hours - 40) * wage * 1.5;
        }
        return earning;
    }
}
```

```java
package com.mycompany.assignment3;

public class SalariedEmployee extends Employee {
    private int weeklySalary;

    public SalariedEmployee(int weeklySalary, String firstName,
            String lastName, String SSN, Date birthDate) {
        super(firstName, lastName, SSN, birthDate);
        this.weeklySalary = weeklySalary;
    }

    @Override
    public String toString() {
        return "SalariedEmployee{" + "WeeklySalary=" + weeklySalary +
                '}'+super.toString();
    }

    @Override
    public double earnings() {
        //Added 10% due to given condition.
        return weeklySalary+ ((weeklySalary*10)/100);
    }

}
```

```java
package com.mycompany.assignment3;

public class CommissionEmployee extends Employee {

    int commissionRate;
    int grossSales;

    public CommissionEmployee(int commissionRate, int grossSales,
            String firstName, String lastName, String SSN, Date birthDate) {
        super(firstName, lastName, SSN, birthDate);
        this.commissionRate = commissionRate;
        this.grossSales = grossSales;
    }

    @Override
    public String toString() {
        return "CommissionEmployee{" + "commissionRate=" + commissionRate +
                ", grossSales=" + grossSales + '}'+super.toString();
    }

    @Override
    public double earnings() {
       //Added 10% due to given condition
        return (commissionRate * grossSales)+(((commissionRate * grossSales)*10)/100);
    }
}
```

```java
package com.mycompany.assignment3;

public class BasePlusCommissionEmployee extends CommissionEmployee {

    private int baseSalary;

    public BasePlusCommissionEmployee(int commissionRate, int grossSales,
            int baseSalary, String firstName,
            String lastName, String SSN, Date birthDate) {
        super(commissionRate,grossSales, firstName, lastName, SSN, birthDate);
        this.baseSalary = baseSalary;
    }

    @Override
    public String toString() {
        return "BasePlusCommissionEmployee{" + "Base Salary= "+
                baseSalary + '}' + super.toString();
    }

    @Override
    public double earnings() {
        return super.commissionRate+ super.grossSales + baseSalary;
    }
}
```

```
package com.mycompany.assignment3;

public class PieceWorker extends Employee {

    private int wage;
    private int pieces;

    public PieceWorker(int wage, int pieces, String firstName,
            String lastName, String SSN, Date birthDate) {
        super(firstName, lastName, SSN, birthDate);
        this.wage = wage;
        this.pieces = pieces;
    }

    @Override
    public double earnings() {
        return wage * pieces;
    }

    @Override
    public String toString() {
        return super.toString() + "PieceWorker{" +
                "Wage=" + wage + ", Pieces=" + pieces + '}';
    }

}
```

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package com.mycompany.assignment3;

import java.io.IOException;

/**
 *
 * @author hp
 */
public class InvalidDayException extends IOException {

    @Override
    public String getMessage() {
        return "The Entered Day is Out of Acceptable Range!\n";
    }

}
```

```java
/*
 * To change this license header, choose License Headers in Project Properties.
 * To change this template file, choose Tools | Templates
 * and open the template in the editor.
 */
package com.mycompany.assignment3;

/**
 *
 * @author hp
 */
public class InvalidChoiceException extends RuntimeException {

    @Override
    public String getMessage() {
        return "The Entered Choice is Invalid!";
    }
}
```

```
package com.mycompany.assignment3;

import java.util.Scanner;

public class Payroll extends InvalidDayException {

    public static void main(String[] args) {
        Scanner intScan = new Scanner(System.in);
        Scanner stringScan = new Scanner(System.in);
        int day = 0;
        try {
            System.out.println("Enter the Payroll Day> ");
            day = intScan.nextInt();
            if (day > 31 || day < 0) {
                throw new InvalidDayException();
            }
        } catch (InvalidDayException IDE) {
            do {
                System.out.println(IDE.getMessage());
                System.out.println("Enter the Payroll Day Again> ");
                day = intScan.nextInt();

            } while (day < 0 || day > 31);

        }

        System.out.println("Enter the Payroll Month> ");
        int month = intScan.nextInt();
        System.out.println("Enter the Payroll Year> ");
        int year = intScan.nextInt();

        Date payrollDate = new Date(day, month, year);
        System.out.println("Enter the number of Employees: ");
        int arraySize = intScan.nextInt();

        Employee array[] = new Employee[arraySize];

        System.out.println("---Input Data---");

        for (int i = 0; i < array.length; i++) {
            System.out.println("Enter your Choice(1=> Salaried Employee, 2="
                    + "> Hourly Employee, 3=> Commission Employee, 4=>"
                    + " Base Plus Commission Employee, 5=> Piece Worker)");
            int choice = intScan.nextInt();

            switch (choice) {
                case 1:
                    System.out.println("Enter First Name> ");
                    String firstName1 = stringScan.nextLine();
                    System.out.println("Enter Last Name> ");
                    String lastName1 = stringScan.nextLine();
                    System.out.println("Enter Weekly Salary> ");
                    int weeklySalary1 = intScan.nextInt();
                    System.out.println("Enter Social Security Number> ");
```

```
                String SSN1 = stringScan.nextLine();
                System.out.println("Enter Birth Day> ");
                int birthDay1 = intScan.nextInt();
                System.out.println("Enter Birth Month> ");
                int birthMonth1 = intScan.nextInt();
                System.out.println("Enter Birth Year> ");
                int birthYear1 = intScan.nextInt();

                Date Date1 = new Date(birthDay1, birthMonth1, birthYear1);
                array[i] = new SalariedEmployee(weeklySalary1, firstName1,
                        lastName1, SSN1, Date1);
                break;
            case 2:
                System.out.println("Enter First Name> ");
                String firstName2 = stringScan.nextLine();
                System.out.println("Enter Last Name> ");
                String lastName2 = stringScan.nextLine();
                System.out.println("Enter Social Security Number> ");
                String SSN2 = stringScan.nextLine();
                System.out.println("Enter Wage per Hour> ");
                int wage = intScan.nextInt();
                System.out.println("Enter Work Hours> ");
                int hours = intScan.nextInt();
                System.out.println("Enter Birth Day> ");
                int birthDay2 = intScan.nextInt();
                System.out.println("Enter Birth Month> ");
                int birthMonth2 = intScan.nextInt();
                System.out.println("Enter Birth Year> ");
                int birthYear2 = intScan.nextInt();

                Date Date2 = new Date(birthDay2, birthMonth2, birthYear2);
                array[i] = new HourlyEmployee(wage, hours, firstName2,
                        lastName2, SSN2, Date2);

                break;
            case 3:
                System.out.println("Enter First Name> ");
                String firstName3 = stringScan.nextLine();
                System.out.println("Enter Last Name> ");
                String lastName3 = stringScan.nextLine();
                System.out.println("Enter Social Security Number> ");
                String SSN3 = stringScan.nextLine();
                System.out.println("Enter Commission Rate> ");
                int commissionRate1 = intScan.nextInt();
                System.out.println("Enter Gross Sales> ");
                int grossSales1 = intScan.nextInt();
                System.out.println("Enter Birth Day> ");
                int birthDay3 = intScan.nextInt();
                System.out.println("Enter Birth Month> ");
                int birthMonth3 = intScan.nextInt();
                System.out.println("Enter Birth Year> ");
                int birthYear3 = intScan.nextInt();

                Date Date3 = new Date(birthDay3, birthMonth3, birthYear3);
```

```
            array[i] = new CommissionEmployee(commissionRate1,
                    grossSales1, firstName3, lastName3, SSN3, Date3);

            break;
        case 4:
            System.out.println("Enter First Name> ");
            String firstName4 = stringScan.nextLine();
            System.out.println("Enter Last Name> ");
            String lastName4 = stringScan.nextLine();
            System.out.println("Enter Social Security Number> ");
            String SSN4 = stringScan.nextLine();
            System.out.println("Enter Base Salary> ");
            int baseSalary = intScan.nextInt();
            System.out.println("Enter Commission Rate> ");
            int commissionRate2 = intScan.nextInt();
            System.out.println("Enter Gross Sales> ");
            int grossSales2 = intScan.nextInt();
            System.out.println("Enter Birth Day> ");
            int birthDay4 = intScan.nextInt();
            System.out.println("Enter Birth Month> ");
            int birthMonth4 = intScan.nextInt();
            System.out.println("Enter Birth Year> ");
            int birthYear4 = intScan.nextInt();

            Date Date4 = new Date(birthDay4, birthMonth4, birthYear4);
            array[i] = new BasePlusCommissionEmployee(commissionRate2,
                    grossSales2, baseSalary, firstName4,
                    lastName4, SSN4, Date4);

            break;
        case 5:
            System.out.println("Enter First Name> ");
            String firstName5 = stringScan.nextLine();
            System.out.println("Enter Last Name> ");
            String lastName5 = stringScan.nextLine();
            System.out.println("Enter Social Security Number> ");
            String SSN5 = stringScan.nextLine();
            System.out.println("Enter Wage per Piece> ");
            int wagePerPiece = intScan.nextInt();
            System.out.println("Enter Number of Pieces> ");
            int numOfPieces = intScan.nextInt();
            System.out.println("Enter Birth Day> ");
            int birthDay5 = intScan.nextInt();
            System.out.println("Enter Birth Month> ");
            int birthMonth5 = intScan.nextInt();
            System.out.println("Enter Birth Year> ");
            int birthYear5 = intScan.nextInt();

            Date Date5 = new Date(birthDay5, birthMonth5, birthYear5);
            array[i] = new PieceWorker(wagePerPiece, numOfPieces,
                    firstName5, lastName5, SSN5, Date5);

            break;
```

```
                default:
                    throw new InvalidChoiceException();
            }

        }

        System.out.println("---Printing Data---");
        System.out.printf("Date : %d/%d/%d\n", day, month, year);

        for (int i = 0; i < array.length; i++) {
            System.out.println("--------------------------------");
            System.out.printf("|Displaying Data of Employee#%d|\n", i + 1);
            System.out.println("--------------------------------");
            System.out.println(array[i].toString());
            if (array[i] instanceof BasePlusCommissionEmployee) {
                System.out.println("Earnings (Including B.P.C.E. Bonus)>"
                        + (array[i].earnings() + 100));
                System.out.println("");
            } else if (array[i].getBirthDate().getMonth() == payrollDate.getMonth()) {
                System.out.println("Earnings (Including Birthday Bonus)> "
                        + (array[i].earnings() + 100));
                System.out.println("");
            } else {
                System.out.println("Earnings> " + array[i].earnings());
                System.out.println("");
            }

        }
    }
}
```

```
----------------------< com.mycompany:Assignment3 >----------------------
Building Assignment3 1.0-SNAPSHOT
--------------------------------[ jar ]---------------------------------

--- exec-maven-plugin:3.0.0:exec (default-cli) @ Assignment3 ---
Enter the Payroll Day>
32
The Entered Day is Out of Acceptable Range!

Enter the Payroll Day Again>
-1
The Entered Day is Out of Acceptable Range!

Enter the Payroll Day Again>
10
Enter the Payroll Month>
10
Enter the Payroll Year>
2021
Enter the number of Employees:
6
---Input Data---
Enter your Choice(1=> Salaried Employee, 2=> Hourly Employee, 3=> Commission Employee,
4=> Base Plus Commission Employee, 5=> Piece Worker)
1
Enter First Name>
Rana Fahad
Enter Last Name>
Aman
Enter Weekly Salary>
1000
Enter Social Security Number>
21
Enter Birth Day>
20
Enter Birth Month>
12
Enter Birth Year>
2003
Enter your Choice(1=> Salaried Employee, 2=> Hourly Employee, 3=> Commission Employee,
4=> Base Plus Commission Employee, 5=> Piece Worker)
2
Enter First Name>
Haris
Enter Last Name>
Shaukat
Enter Social Security Number>
29

Enter Wage per Hour>
1000
Enter Work Hours>
24
Enter Birth Day>
12
Enter Birth Month>
12
Enter Birth Year>
2001
Enter your Choice(1=> Salaried Employee, 2=> Hourly Employee, 3=> Commission Employee,
4=> Base Plus Commission Employee, 5=> Piece Worker)
3
Enter First Name>
Enter Last Name>
Humayun Farooq
Enter Social Security Number>
43
Enter Commission Rate>
1000
```

```
Enter Gross Sales>
20
Enter Birth Day>
30
Enter Birth Month>
12
Enter Birth Year>
2000
Enter your Choice(1=> Salaried Employee, 2=> Hourly Employee, 3=> Commission Employee, 4=> Base Plus Commission Employee, 5=> Piece Worker)
4
Enter First Name>
Affan
Enter Last Name>
Qureshi
Enter Social Security Number>
53
Enter Base Salary>
10000
Enter Commission Rate>
100
Enter Gross Sales>
100
Enter Birth Day>
12
Enter Birth Month>
12
Enter Birth Year>
12
Enter your Choice(1=> Salaried Employee, 2=> Hourly Employee, 3=> Commission Employee, 4=> Base Plus Commission Employee, 5=> Piece Worker)
5
Enter First Name>
Daud
Enter Last Name>
Hassan
Enter Social Security Number>
37
Enter Wage per Piece>
1000
Enter Number of Pieces>
300
Enter Birth Day>
20
Enter Birth Month>
10
Enter Birth Year>
2004
Enter your Choice(1=> Salaried Employee, 2=> Hourly Employee, 3=> Commission Employee, 4=> Base Plus Commission Employee, 5=> Piece Worker)
6
Exception in thread "main" com.mycompany.assignment3.InvalidChoiceException: The Entered Choice is Invalid!
    at com.mycompany.assignment3.Payroll.main(Payroll.java:164)
Command execution failed.
```