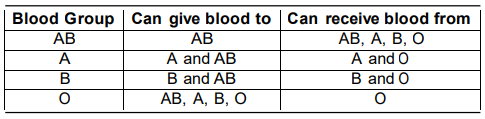
Week 5 Lab – Nested if Statements

*Please complete any 2 exercises*

## Lab 1



You have been asked to develop an application that allows a user to enter their age and blood type. The app will then display a message outlining which blood groups the user can donate to and receive from. Please note that only 18+ can donate. Use instantiable classes in your application. Save the instantiable class as Blood Before you start implementing the application, perform the following tasks:

* Identify the input
* Identify the process
* Identify the output
* Draw/write, on paper, the IPO chart to plan the classes you will need to implement to develop the application.

## Lab 2

Develop an application that allows the user to book a hotel room. The user should be asked for their name, the required number of nights, and their age. The application should assume that each room costs 90 euro per night and then calculate and output the total cost to confirm the booking. Please note: a booking can only be confirmed if the user is at least 18.

## Lab 3

The Students Union is planning a Big Night Out event for all students but unfortunately, they couldn’t find a venue big enough to accommodate all courses together and so they have had to book 2 different venues and assign different programmes and years to each venue. They have asked you to develop an application that would enable a student to find out which venue their night out will be in. The application should allow the student to enter their programme code (this should facilitate both upper and lowercase text) and their year of study and should then calculate and output the venue where their night out will take place. The location of each night out is listed in the table below.

|  |  |  |
| --- | --- | --- |
| Year | Programme |  |
| 1 | HDAIML | Lagoona |
| HDBC | Harbourmaster |
| 2 | HDAIML | Harbourmaster |
| HDBC | Lagoona |

## Lab 4

Freeform Lab: Create a short text adventure story based game where the user must make choices to continue the story. The story should use either logical operators or nested if statements.

Inspiration: <http://textadventures.co.uk/>

# Advanced Labs

## Leap Year

Write a Java program that takes a year from user and print whether that year is a leap year or not.

Leap Year Rules: How to Calculate Leap Years

In the Gregorian calendar, three criteria must be taken into account to identify leap years:

* The year must be evenly divisible by 4;
* If the year can also be evenly divided by 100, it is not a leap year;
  + unless...
  + The year is also evenly divisible by 400. Then it is a leap year.
* According to these rules, the years 2000 and 2400 are leap years,

while 1800, 1900, 2100, 2200, 2300, and 2500 are not leap years.

## Rock Paper Scissors

Create an application that implements the functionality of Rock Paper Scissors. The user should first be asked to choose an option as an integer (Rock, Paper or Scissors) where Rock is 1, Paper is 2, and Scissors is 3.

The computer should also pick a **random** **option** (1, 2 or 3). Once both options have been chosen, the user should be told whether they have won lost or drawn in a format like the below.

*You chose Rock, the Computer chose Paper*

*You lose!*

Rules:

|  |  |  |
| --- | --- | --- |
| User | Computer | Result |
| Rock | Paper | Lose |
| Rock | Scissors | Win |
| Paper | Rock | Win |
| Paper | Scissors | Lose |
| Any ties (rock/rock paper/paper scissors/scissors should produce a ‘draw’ message) | | |

To do: Change the application to use JOptionPane showOptionDialog https://mkyong.com/swing/java-swing-joptionpane-showoptiondialog-example/