| | **COMP-2120, Fall 2024**<br>**Object Oriented Programming**<br>**Using Java**<br>**Assignment 1**<br>**TOTAL MARKS: 35** |
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| **University of Windsor**<br>**SCHOOL OF COMPUTER SCIENCE** | |

# SUBMISSION DEADLINE: 11:59 PM, NOV-10, 2024

## SUBMISSION GUIDELINE
1. This is an individual assignment. You are allowed to discuss the assignment but you cannot copy code from others/ share code with others. Any form of plagiarism will lead to a score of 0 for your assignment.
2. Ensure that your source code is properly formatted (i.e., code has proper indentation, whitespaces, meaningful variable names).
3. Add comment to your code to explain what the code is doing.
4. Include your first name, last name and student number at the beginning of each file using comment. You can also use Javadoc comments (@author) to include the information.

## PROBLEM
In this assignment, you need to create a program that allow users (i.e., players) to guess the birthday of a person (e.g., Terry Fox was born on July 28, 1958).

## PROCEDURE
1. Greet the human player and ask the player to select one from a list of persons (e.g., you can print the name of a celebrity along with the country). Ask the player to input a number to select a person to guess his/her birthday. Your program should provide at least three options (i.e., three persons) to choose from.
2. The player tries to guess by typing his/her answer in the following format: "DD/MM/YYYY". Where DD is for day, MM is for month (A preceding 0 may or may not be present if the number is less than 10. For example, Jan 1 can be written as 01 or simply by typing 1), and YYYY is for year.
3. The game continues until the player guess the birthday correctly or type "quit" instead of the date. In that case, your program should thank the player to play the game and terminate.

4. If the player makes an incorrect guess, the program should inform whether he/she needs to pick an earlier date or later date (e.g., Oops! Incorrect guess. Try an earlier date).
5. If the player makes a correct guess, inform the player about the success (e.g., Congratulations. Correct guess!!!). Your program should ask the player to select another person to play the game again.

## IMPLEMENTATION DETAILS

1. Define a class Date with three instance variables: int day, int month, int year. **(1 Mark)**
2. Your class should have a constructor that takes three parameters to initialize all three variables. **(2 Marks)**
3. Create a copy constructor to initialize the instance variables by obtaining a reference to another Date object. **(2 Marks)**
4. Date class should have a constructor that receives a string as a parameter in the following two formats: a) 01/01/1983. Here, the format is DD/MM/YYYY. A preceding zero may or may not be added if a month/day is less than zero. Thus, the following are examples of valid input: 1/1/1983 or 01/1/1983. b) Jan 1, 2023. Here, the format is: MMM DD, YYYY. MMM represents a string of three characters to represent the month, DD represents the day (A preceding zero may or may not be added if the day is less than 10), and YYYY represents the year. **(5 Marks)**
5. Define a method (i.e., boolean equals(Date date)) to determine whether two Date objects are same or not. **(2 Marks)**
6. Your program should be able to handle invalid input.
7. Define a Person class with three instance variables: String name, Date birthday, and String country. **(1 Mark)**
8. Create constructor to initialize the variables and also create a copy constructor. (**1+1 Marks**)
9. Define a toString() method that returns the content as follows: NAME, born on DD/MM/YYYY in COUNTRY. You need to put appropriate values to replaces NAME, DD, MM, YYYY and COUNTRY. (**2 Marks**)
10. Now, create a class, called GuessMaker that will control the game.
11. The class GuessMaker should contain an array to maintain a list of Persons to guess from. GuessMaker should also have an int variable, called currentPerson that points to the index of the Person object in the array that is used to play the game. The value of the variable needs to be updated to reflect any changes in the game (i.e., player is guessing the birthday of another person). **(2 Marks)**
12. GuessMaker should have a constructor to add three Persons (i.e., public GuessMaker (Person p1, Person p2, Person p3)) and another method (i.e., public void addPerson (Person person))to add more Persons to the game. **(2 Marks)**
13. Create a method: public void startGame() that controls the game loop. Ensure that the loop is working correctly. **(8 Marks)**
14. Add appropriate mutators and accessors. The program should be designed to maintain the idea of encapsulation. Add additional code to handle incorrect input.

15. Create a method public static void main (String args[]) inside the GuessMaker to test the game. **(1 Mark)**

## DISTRIBUTION OF MARKS
1. Implement the Date class (**12 Marks**)
2. Implement the Person class (**5 Marks**)
3. Implement the GuessMaker (**13 Marks**)
4. Format and comment your code (including adding author information) (**5 Marks**)

## WHAT DO YOU NEED TO DO?
1. Complete the program.
2. Put all the files inside a single folder.
3. Rename the folder as follows: FirstName_LastName_StudentNumber_Assignment1
4. Zip up your folder and submit it under the "Assignment 1" submission on Brightspace.