Reem Ezeddin
IT814 - Fall 2022
Mini project#2-b

White Box Testing

NextDate Program

Project#2-b

11/28/2022

NextDate program is a function that finds the next date for a given date.

This program classifies the months into 3 classes:

> Class #1: Months have 31 days {"January", "March", "May", "July", "August", "October", "December"}.
>
> Class #2: Months have 30 days {"April", "June", "September", "November"}.
>
> Class #3: {"February"}.

We considered that all variables declarations have been done in node 0. Also, we see that this code dose not match the graph and the behavior in some points, so we will edited some points (The star points in the following code):

{Case "February"

~~Node (0)~~ Node (9)*

If InDay < 28 Then

~~Node (9)~~ Node (10)*

OutDay = InDay + 1

OutMonth = InMonth

ElseIf InDay = 28 Then

~~Node (10)~~*

Node (11)}

This program takes a date in format of “MM, DD, YYYY”, and returned output will be one of the following scenarios:

First: the regular incremented date. That happened in any of the following input types:

1- Months class #1, 1 < Day < 30, Any year.
2- Months class #2, 1 < Day < 29, Any year.
3- Months class #3, 1 < Day < 27, Not leap year.
4- Months class #3, Day = 28, Leap year.

Second: Month incremented and the day reassigned to 1. That happened in any of the following input types:

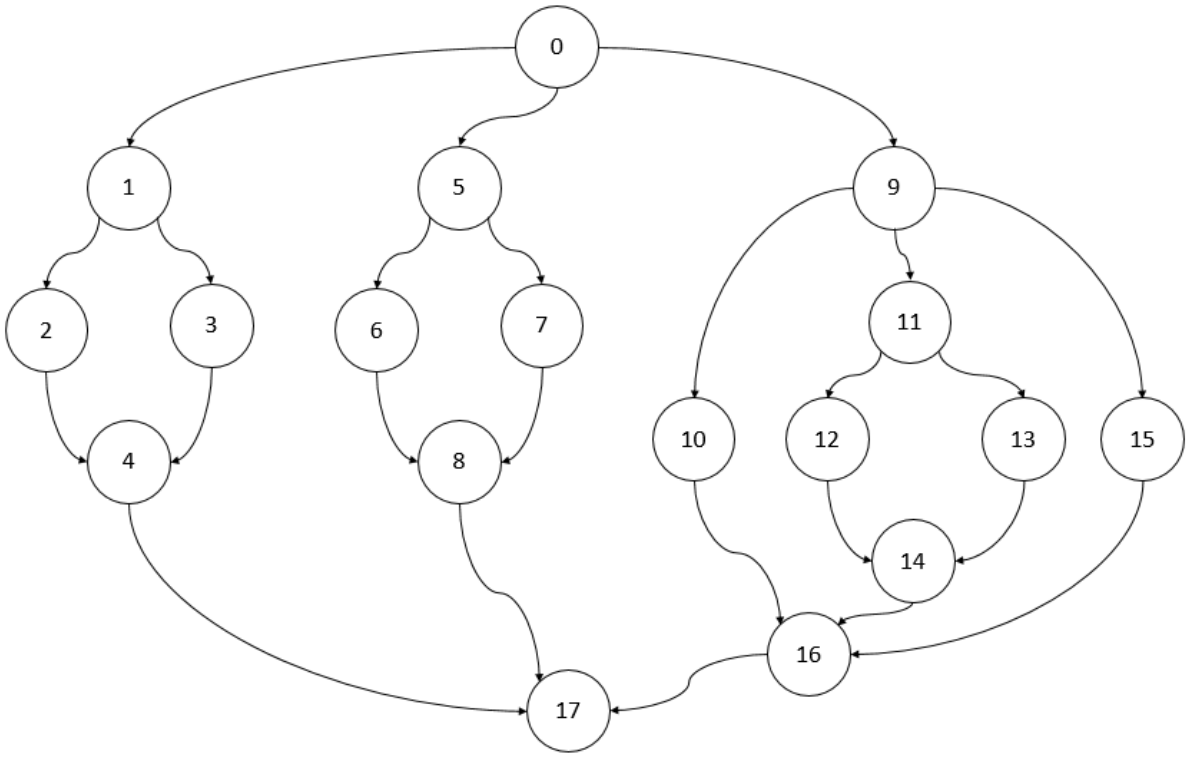
1- Months class #1, Day = 31, Any year.
2- Months class #2, Day = 30, Any year.
3- Months class #3, Day = 28, Not leap year.
4- Months class #3, Day = 29, Leap year.

Third: Month reassigned to January, Day re assigned to 1, and the year incremented by 1. That happened if the interred date was December, 31, Any year.

Fourth: Any other input should return “Impossible”.

In this document, we will consider test cases will be generated to cover all DU paths for the 6 variables: InDay, InMonth, InYear, OutDay, OutMonth, and OutYear.

Control Flow Graph:



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Du paths and test cases:

1. InDay:

Du-Pairs	Du-Paths	Test case	
		Input	Expected Output
(0,<1,2>)	0,1,2	March 25,1995	March 26,1995
(0,2)	0,1,2		
(0,<5,6>)	0,5,6	June 19,2015	June 20,2015
(0,6)	0,5,6		
(0,<9,10>)	0,9,10	February 20, 2022	February 21, 2022
(0,9)	0,9		
(0,<9,11>)	0,9,11	February 28, 2000	February 29, 2000

2. InMonth:

Du-Pairs	Du-Paths	Test case	
		Input	Expected Output
(0,2)	0,1,2	January 01, 2011	January 02, 2011
(0,<1,2>)	0,1,2		
(0,<1,3>)	0,1,3	January 31, 2015	February 01, 2015
(0,6)	0,5,6	April 20, 1995	April 21, 1995
(0,<5,6>)	0,5,6		
(0,7)	0,5,7	April 31, 2003	Invalid
(0,<5,7>)	0,5,7		
(0,<9,10>)	0,9,10	February 20,2021	February 21,2021
(0,10)	0,9,10		
(0,<9,11>)	0,9,11	February 28, 2008	February 29, 2008
(0,12)	0,9,11,12		
(0,13)	0,9,11,13	February 28, 2009	March 01, 2009
(0,15)	0,9,15	February 30, 2005	Invalid
(0,<9,15>)	0,9,15		

3. InYear:

Du-Pairs	Du-Paths	Test case	
		Input	Expected Output
(0,0)	Any	February 28, 2000	February 28, 2000
(0,<11,12>)	0,11,12		
(0,<11,13>)	0,11,13	February 28, 2001	March 01, 2001

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4. OutDay:

Du-Pairs	Du-Paths	Test case	
		Input	Expected Output
(2,17)	2,4,17	March 28, 1995	March 26, 1995
(3,17)	3,4,17	December 31, 2000	January 01, 2001
(6,17)	6,8,17	June 19, 2015	June 20, 2015
(7,17)	7,8,17	April 31, 1995	Invalid
(10,17)	10,16,17	February 25, 1996	February 26, 1996
(12,17)	12,14,16,17	February 28, 2000	February 28, 2000
(13,17)	13,14,16,17	February 28, 2001	March 01, 2001
(15,17)	14,16,17		

5. OutMonth:

Du-Pairs	Du-Paths	Test case	
		Input	Expected Output
(2,17)	2,4,17	March 28, 1995	March 26, 1995
(3,17)	3,4,17	December 31, 2000	January 01, 2001
(6,17)	6,8,17	June 19, 2015	June 20, 2015
(7,17)	7,8,17	April 31, 1995	Invalid
(10,17)	10,16,17	February 25, 1996	February 26, 1996
(12,17)	12,14,16,17	February 28, 2000	February 28, 2000
(13,17)	13,14,16,17	February 28, 2001	March 01, 2001
(15,17)	14,16,17		

6. OutYear:

Du-Pairs	Du-Paths	Test case	
		Input	Expected Output
(0,17)	any	July 05, 2022	July 06, 2022