Test Plan

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CMSC115

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**Program Goals & Objectives**

The purpose of this program is to prompt the user to enter a month and a year, and then display the number of days in that month for the specified year. The program correctly accounts for leap years when calculating the number of days in February.

**Program Functional Requirements**

1. The program should prompt the user to enter a month as an integer between 1 and 12.

2. The user should be able to enter the month as a numerical value representing the month (e.g., 1 for January).

3. The program should validate that the entered month is within the valid range (1-12).

4. If the user enters an invalid month, the program should display an appropriate error message and terminate.

5. The program should prompt the user to enter a year as a positive integer.

6. The user should be able to enter the year as a numerical value.

7. The program should calculate whether the year is a leap year.

• A year is a leap year if it is divisible by 4 but not by 100, or it is divisible by 400.

8. The program should determine the number of days in the entered month for the specified year.

9. The program should display the month name, the year, and the number of days in the month.

**Program Pseudocode**

START

Prompt user to "Enter a month in the year (e.g., 1 for Jan): "

Read month

IF month < 1 OR month > 12 THEN

Display "Invalid month"

Terminate program

ENDIF

Prompt user to "Enter a year: "

Read year

Initialize days to 0

Initialize monthName to ""

SWITCH (month)

CASE 1:

monthName = "January"

days = 31

BREAK

CASE 2:

monthName = "February"

IF (year % 4 == 0 AND year % 100 != 0) OR (year % 400 == 0) THEN

days = 29

ELSE

days = 28

ENDIF

BREAK

CASE 3:

monthName = "March"

days = 31

BREAK

CASE 4:

monthName = "April"

days = 30

BREAK

CASE 5:

monthName = "May"

days = 31

BREAK

CASE 6:

monthName = "June"

days = 30

BREAK

CASE 7:

monthName = "July"

days = 31

BREAK

CASE 8:

monthName = "August"

days = 31

BREAK

CASE 9:

monthName = "September"

days = 30

BREAK

CASE 10:

monthName = "October"

days = 31

BREAK

CASE 11:

monthName = "November"

days = 30

BREAK

CASE 12:

monthName = "December"

days = 31

BREAK

ENDSWITCH

Display monthName + " " + year + " has " + days + " days"

END

**Program Flowchart**

**Table 1 – Traceability Matrix**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test Case | Input/Output | Expected Result | Actual Result | Outcome  (Pass/Fail) |
| 1a |  |  |  |  |
| 2a |  |  |  |  |
| 3a |  |  |  |  |