

**COMPUTER SCIENCE – 2001**

**Paper-2**

**(PRACTICAL)**

*(Planning Session : Two hours)*

*(Examination Session: one hour)*

*(Maximum Marks: 100)*

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**INSTRUCTIONS**

As it is a practical examination, the candidate is expected to do the following:

- (a) Write an algorithm for the selected problem.
- (b) Prepare an Input/Process/Output table indicating the required inputs for the problem. Also state the method/formula for solving the problem and mention the required output.
- (c) Write a program in C++, test run the program on the computer using the given test data and get a print out (hard copy) in the format specified in the problem alongwith the program listing.

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*Solve any **one** of the following problems:*

Q1. Consider the sequence of natural numbers.

1, 2, 3, 4, 5, 6, 7 .....

Removing every second number produces the sequences

1, 3, 5, 7, 9, 11, 13, 15, 17 .....

This process continues indefinitely by removing the fourth, fifth....and so on, till after a fixed number of steps, certain natural numbers remain indefinitely. These are

known as lucky numbers. Write a program to generate and print lucky numbers less than a given number  $N < 50$ .

SAMPLE INPUT :  $N = 10$

OUTPUT :

THE LUCKY NUMBERS LESS THAN 10 ARE:

1

3

7.

SAMPLE INPUT :  $N = 25$

OUTPUT :

THE LUCKY NUMBERS LESS THAN 10 ARE:

1

3

7

13

19.

Q2. Input consists of the month number (MM), the day of the month (DD) and the year (YYYY). Write a program to calculate and print the corresponding day of the year (in the range 1 to 366).

Example :

INPUT : month number 05

Day 03

Year 1996

OUTPUT: CORRESPONDING DAY OF THE YEAR IS : 124

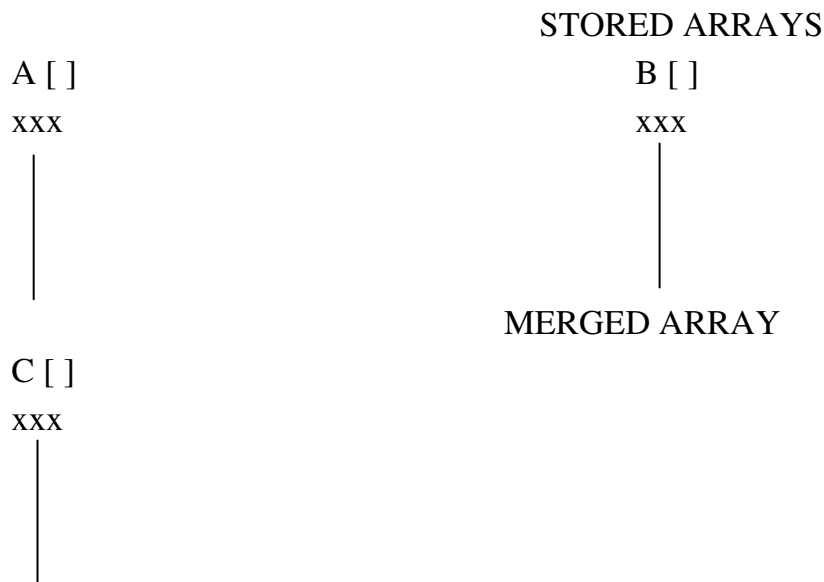
(31 + 29 + 31 + 30 + 3 = 124)

Test your program for the following sample data.

MONTH NUMBER	DAY	YEAR
09	07	2000
05	03	1954
12	13	1960

- Q3. Write a program which inputs natural numbers N and M followed by integer arrays A [ ] and B [ ], each consisting of N and M number of elements respectively. Sort the arrays A [ ] and B [ ] in descending order of magnitude. Use the stored arrays to generate a merged array C [ ]. Array c [ ] should be generated in descending order .

Assume the input arrays to comprise maximum 20 elements each, with no duplicates. Common elements should be included in the merged array only once. The output format is as follows:



Test your program for the followings ample data:

N = 5                   : M = 8  
A [ ] =                4    16   2    9    26  
B [ ] =                24   3  -2   12    5  9    1    16.

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