Looping Concepts

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Agenda

- ➢ Recap of Data types
- ➢ Problem on if condition
- ➢ Controls
  - ○ Branching
  - ○ Looping
    - ■ for
    - ■ while
    - ■ do while
  - ○ Jumping
    - ■ break
    - ■ continue

Data types

❖ Primitive data types
  ➢ Int
  ➢ float
  ➢ etc …
❖ Non primitive data types
  ➢ String
  ➢ Arrays
  ➢ etc ..

Primitive data types

Type	Size in bytes	Range	Default Value
byte	1 byte	-128 to 127	0
short	2 bytes	-32,768 to 32,767	0
int	4 bytes	-2,147,483,648 to 2,147,483, 647	0
long	8 bytes	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807	0
float	4 bytes	approximately ±3.40282347E+38F (6-7 significant decimal digits) Java implements IEEE 754 standard	0.0f
double	8 bytes	approximately ±1.79769313486231570E+308 (15 significant decimal digits)	0.0d
char	2 bytes	0 to 65,536 (unsigned)	'\u0000'
boolean	Not precisely defined*	true or false	false

Task is to find given number is multiple of 10 and multiple of 7

1. Input: 70
   Output: YES
2. Input: 140
   Output: YES
3. Input: 100
   Output: NO
4. Input: 77
   Output: NO

Control Structures

- ❖ Branching
  - ➢ if
  - ➢ If else
  - ➢ If else if
  - ➢ switch
- ❖ Looping
  - ➢ while
  - ➢ for
  - ➢ do while
  - ➢ Enhanced for loop
- ❖ Jump
  - ➢ break;
  - ➢ continue;

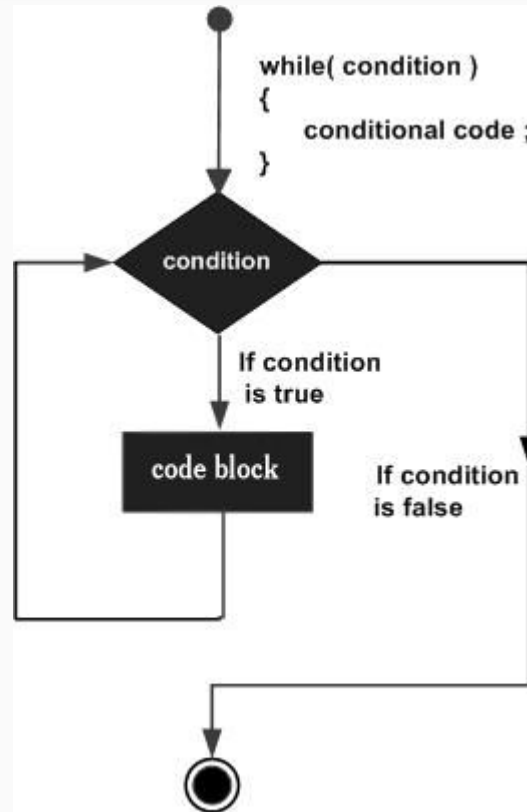Write a program to print 1 to 4

1. Input: NA
   Output: 1
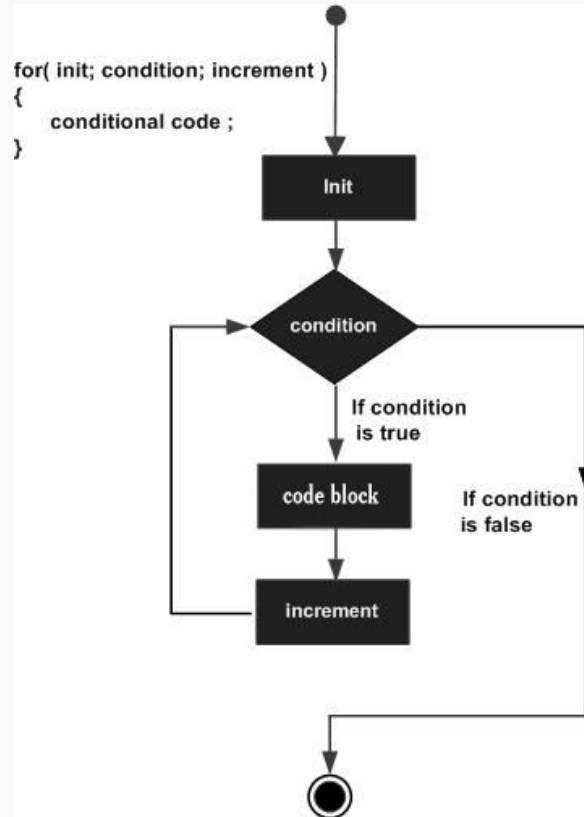
   2

   3

   4

Write a program to print 1 to n, where n is an input
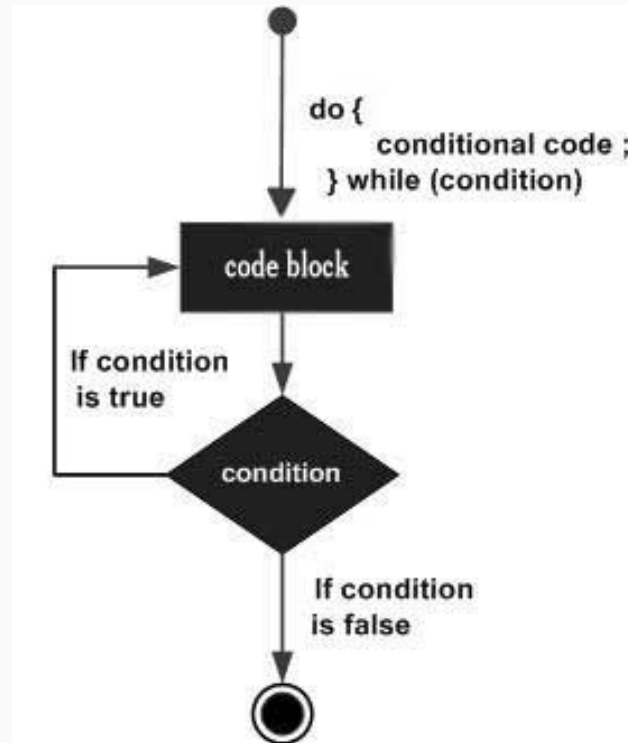
1. Input: 5
   Output: 1

   2

   3

   4

   5

While loop

For loop

Do While loop

do {
        conditional code ;
} while (condition)

Consider while writing loop

1. Ensure condition is met at some point, otherwise loop runs **indefinitely**
2. Do proper increment or decrement or any to ensure **control is moving**
3. Running loop for more number of times, and performing write operation inside it may lead **not enough memory exceptions**
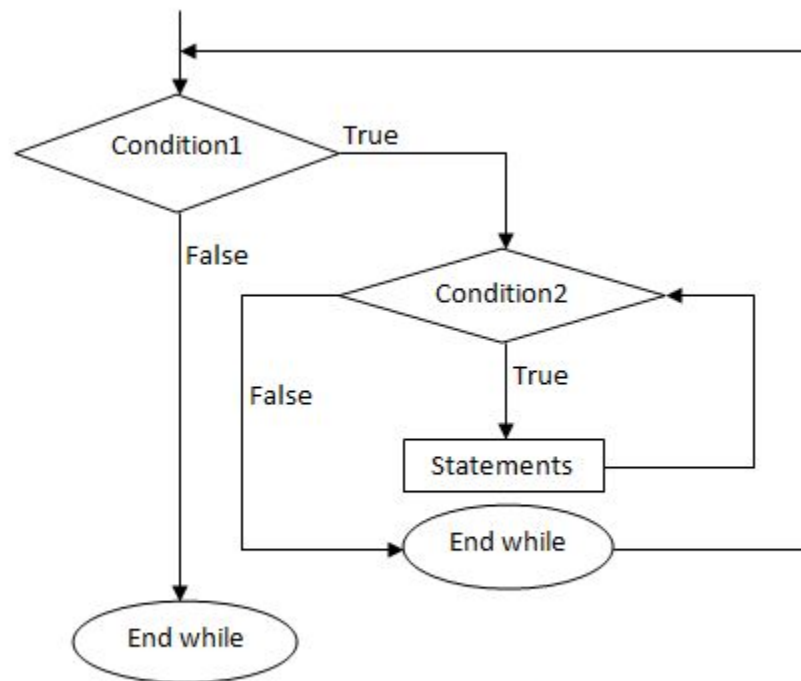
Nested Loop

fig: Flowchart for nested while loop

Write a program to print the following pattern

1. Input: 3
   Output: 123

   123

   123

2. Input: 4

   Output: 1234

   1234

   1234

   1234

Break & continue

1. Break -> stop the execution of the loop if condition meets
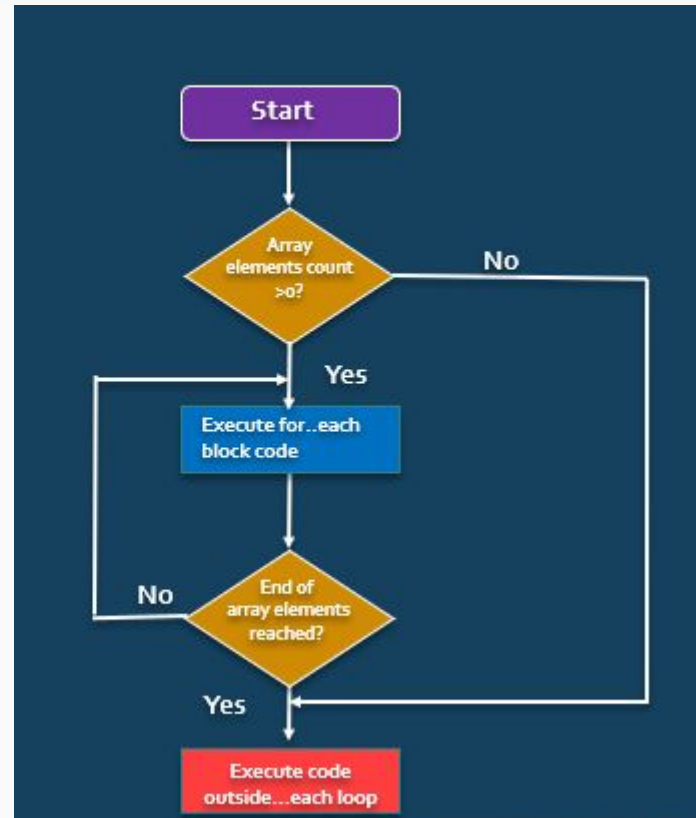2. Continue -> inside the loop, skip all the below lines

berak

continue

Problems

1. print numbers 1 to n
2. Sum of numbers 1 to n
3. Print odd numbers from 1 to n
4. Sum and average of 10 numbers
5. Pattern problems

Enhanced for loop

Write a program to print the following pattern

1. Input: 3
   Output: 1

             1 2

             1 2 3

2. Input: 4

   Output: 1

             1 2

             1 2 3

             1 2 3 4

Questions

All the best for Assignments