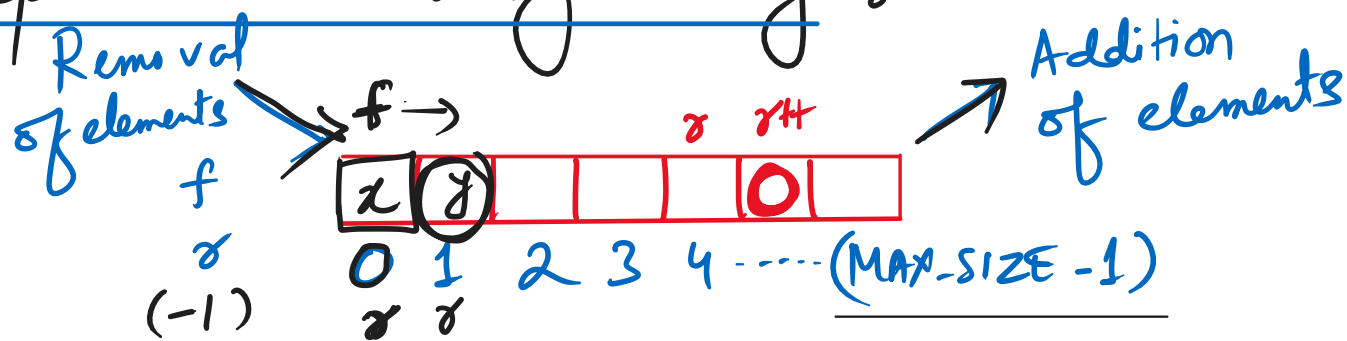


The queue data structure \rightarrow **FIFO** (Mostly used in BFS Traversal in graphs & trees)

Representation using array \rightarrow



Two variables \rightarrow front & rear

① Empty queue \rightarrow (front = rear = -1) Say MAX_SIZE = 100

size: $\begin{matrix} r \\ -1 \\ f \end{matrix}$ $\begin{matrix} r+1 \\ -1+1 \\ = 0 \end{matrix}$

② Single element \rightarrow (front = rear = 0)

size: $\begin{matrix} r \\ 0 \\ f \end{matrix}$ $\begin{matrix} r+1 \\ 0+1 \\ = 1 \end{matrix}$

③ Removal \rightarrow (front++)

④ Addition \rightarrow (rear++)

size: $\begin{matrix} r \\ 0 \\ f \end{matrix}$ $\begin{matrix} r+1 \\ 3+1 \\ = 4 \end{matrix}$

* Given an integer value N, generate binary numbers from "1 to N" in the exact given format: ① 10 11 100 101
(4.5, 5.5, 6, 8) LPA

Initial Queue = ["1"]
Step 1: Pop "1" Print "1" Push "10" & "11" [10, 11]
Step 2: Pop "10" Print "10" Push "100" & "101" [100, 101]
Step 3: Pop "11" Print "11" Push "110" & "111" [110, 111]
Step 4: Pop "100" Print "100" Push "1000" & "1001" [1000, 1001]
Step 5: Pop "101" Print "101" Push "1010" & "1011" [1010, 1011]
(Step)

* Exception Handling \rightarrow

Exception \rightarrow Anything that disturbs/disrupts the normal flow of execution of code is called an exception.

Exception Handling \rightarrow or handling exceptions exception handling.

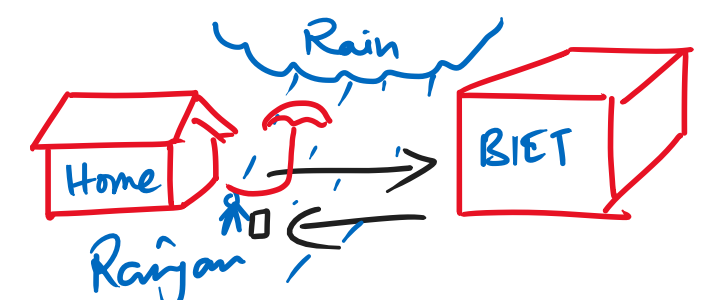
Rain \rightarrow Exception
Umbrella \rightarrow Handler
Raincoat
Cap

The process is called (cannot be handled) Error

Exception can be handled
84B
324B
OOM

* try, catch, finally, throws, throws, Throwable

Compile time \rightarrow syntax
Runtime \rightarrow logical



Exceptions

- ① Checked \rightarrow known
 - ② Unchecked \rightarrow unknown
 - ③ User Defined / Custom Exceptions.
- * Which is the parent class of all errors & exceptions?
 \Rightarrow Throwable

final
 \downarrow
Key word
Constant

finally
block in exception handling

finalize() (JVM)
method in the object class in Java

final class \rightarrow Inherit X
final variable \rightarrow change X
final method \rightarrow Override X
final parameter \rightarrow change X

* When the program terminates, the finalize() method is invoked to delete all garbage.
④ \rightarrow gc()

* Where do we initialize a final variable if not done? Constructor
* Where do we initialize a static final variable if not done? Static Block

Jagged Arrays \rightarrow

Strings are (immutable)
They cannot be changed. They can just be copied into another form.

Strings are
append()
insert()
reverse()

How do we create "Mutable" strings?
[java.lang] String Buffer & String Builder