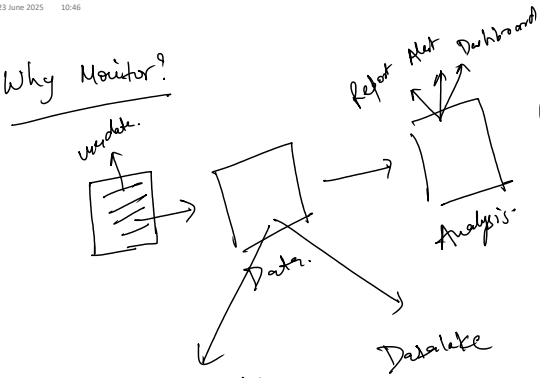
Day - 1

23 June 2025 10:46

Why Monitor?

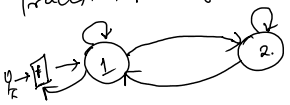


1. Cost.
2. Search engine. → inverted Index. → Reinverted. → Bucket concept
   ↓ Parsing transformation
3. Compatability.
4. Community.
5. Customer Support.

Data Warehouse
(Structured, Semi structured)
↓ CSV.
↓ XML / json.

Datalake
(Structured, Semi structured & Unstructured)
↓ PDF / video / Audio.

1. Monitoring → Reactive Measure. → log
2. Observability → Proactive Measure → Metrics → Aggregate / Boolean. CPU = 80%, IF
   ↓ DT / APPD / Datadog / ELK / New Relic
   → Logs → Timestamp value. time, text
   → Traces. → Flow of req.



* Dynatrace:-

Monitoring — 1. Log Monitoring
2. Infra "
3. Database Visibility (Real user Monitoring)
4. cloud Monitoring.
5. Container Monitoring.
   ↓ Docker / K8 / openshift.
6. End user Monitoring.
   RUM // → Synthetic Monitoring.

APM, AIOPs, cloud infra., DEML (Digital experience Management)

1. Deep Transaction Tracing.
2. Synthetic Monitoring.
3. Real user Monitoring

Around 2014, DT multiple Monitoring Tools

Gartner:-

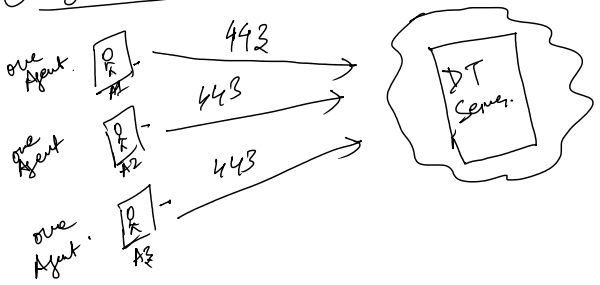
1. AppMon - 5.8-7.2
2. DCRUM - Data Centre Real user Monitoring
3. Enterprise Synthetic
4. Gomez.

→ Dynatrace accused by Ruxit, combine all in one tool that is Dynatrace.

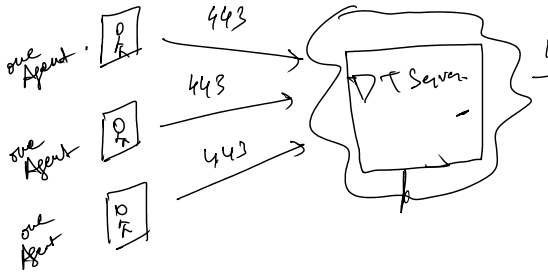
Dynatrace
→ SAAS.
→ Managed.

Dynatrace → Managed.

① Dynatrace SAAS Architecture



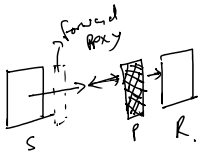
one Agent - Agent that will Capture the data from source end & send to DT Server.
Depends on OS. Not on the App → windows / Linux.



DT will always run on DT.
① check the license validation.
② Upgrade Availability
③ Health check of the Server.

DT Server Components:-

① nginx → Reverse proxy Server. → Hide the identity



② Elastic Search → Engine that Analyze the data.

③ Cassandra Hypercube → Distributed database where data is stored.

④ DT Server. → Collect, Process & Analyze the data.

⑤ Embedded Active Gate → Light weight Agent that collect the local data & sen.

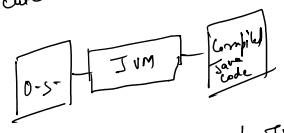
Environment Active Gate → Additional component comes in DT Saas environment.

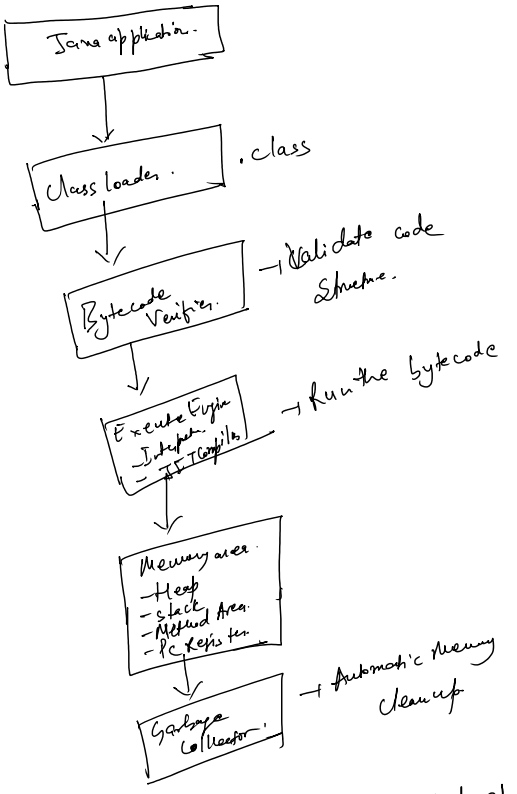
① Access | Monitor private URL.
② Cloud integration like AWS, Azure, GCP.
③ Mainframe App. data need Environment Active Gate.
④ leak to Memory dump, req. Active Gate.

* JVM (Java Virtual Machine):- Memory is divided into several parts.
Memory where all the Object allocation happens.

* JVM (Java Virtual Machine) :- Memory is divided into several parts. Heap Memory where all the object allocation happens.

Virtual machine environment that execute the Java bytecode.

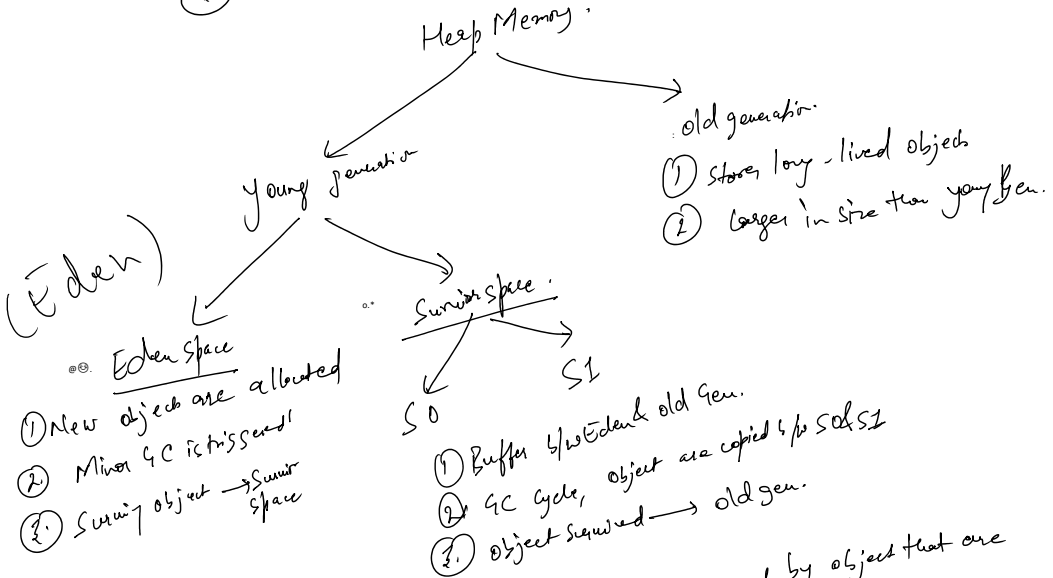




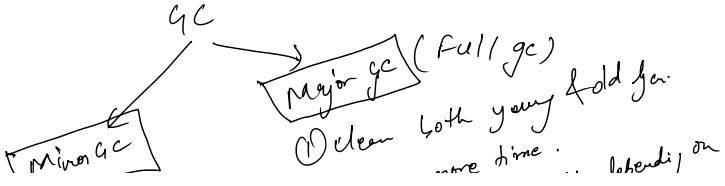
Core Responsibilities of JVM :-

1. Load Code
2. Verify Code
3. Execute Code
4. Manage Memory
5. Provide Portability

Heap Memory :-
1. Dynamic Memory allocation where Java object are created at runtime.
2. All thread in a JVM instance.
3. Garbage collector (GC)



Garbage collector (GC) :- Automatically free memory used by object that are no longer reachable, avoid memory leaks.

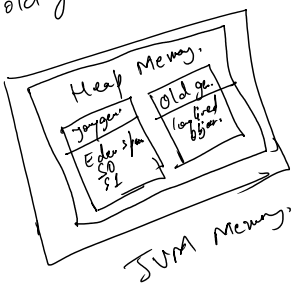


Minor GC

(1) young gen.
(2) Quick & happen often.
(3) Surviving object are moved to survivor space or promoted to old gen

Major GC

(1) clean both young & old gen.
(2) Take more time.
(3) Pause the app. depending on GC Algo.



Memory leak:- Object that are no longer needed remain referenced and cannot be garbage collected. Out of Memory Error.
↳ Causing Leak to fill over the time.

Java - automatic GC → object is not referenced anymore.
code is still referenced to unused object → GC won't clean them
↓
Memory leak.

Reason for Memory leak! :-

(1) Static collection:- List, Map, Set → object → Not been removed.
(2) Event listeners / Observers:- Listener object keep references alive.
(3) Caching w/o limits.

Symptoms:

(1) App. will become slow.
(2) More frequent Full GCs.
(3) OutOfMemoryError:- Java heap space.
(4) GC unable to reclaim the expected Amount of Memory

Thread:-

New → Runnable → Running → Blocked/Waiting → Terminated