

Optimizing Our Queries with Indexes



Abhaya Chauhan

@AbhayaChauhan www.abhayachauhan.com



Job Applications for a Job

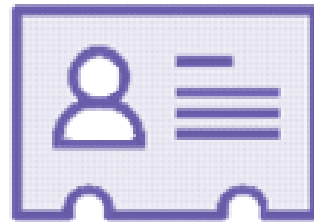
Get all Job Applications for a given Job

Where the Score > 50, and sorted from highest to lowest



Job

.....



Job Application

.....



Users



Job Applications

Table Key Schema and Attributes

Partition Key:	Job Id	String
Sort Key:	User Id	String
	Job Title	String
	Time Applied	Number
	Application Form	String
	Resume	String
	Score	Number

Read API Options

GetItem	Only works for a single item
Query	Queries within a Partition Key
Scan	Scan whole table (last resort)



Job Applications

Current Table			Ideal Table		
Partition Key	Job Id	String	String	Job Id	Partition Key
Sort Key	User Id	String	Number	Score	Sort Key
	Job Title	String	String	Job Title	
	Time Applied	Number	Number	Time Applied	
	Application Form	String	String	Application Form	
	Resume	String	String	Resume	
	Score	Number	String	User Id	



Local Secondary Index (LSI)



An index you can create on a table

Same Partition Key, Alternative Sort Key

Maximum of 5 LSIs per table

LSI can only be created on table creation

WCU and RCU shared

Works in Consistent and Eventually consistent modes



Job Applications for a User

Get all Job Applications for a given User

From latest job application submitted, to earliest



Job

.....



Job Application

.....



Users



Job Applications

Table Key Schema and Attributes

Partition Key:	Job Id	String
Sort Key:	User Id	String
	Job Title	String
	Time Applied	Number
	Application Form	String
	Resume	String
LSI:	Score	Number

Read API Options

GetItem

Only works for a single item

Query

Queries within a Partition Key

Scan

Scan whole table (last resort)



Job Applications

Current Table			Ideal Table		
Partition Key	Job Id	String	String	User Id	Partition Key
Sort Key	User Id	String	Number	Time Applied	Sort Key
	Job Title	String	String	Job Id	
	Time Applied	Number	String	Job Title	
	Application Form	String	String	Application Form	
	Resume	String	String	Resume	
LSI	Score	Number	Number	Score	



Global Secondary Index (GSI)



An index you can create on a table

Alternative Partition Key and Sort Key

Maximum of 5 GSIs per table

GSI can be created anytime

GSIs have dedicated WCU and RCU

Eventually consistent reads only

Partition Key & Sort Key do not need to be unique



LSI v GSI Summary

Local Secondary Index

Same Partition Key, Alternative Sort Key

Maximum of 5 LSIs per table

Only created on table creation

WCU and RCU shared

Consistent and Eventually consistent modes

Global Secondary Index

Alternative Partition Key and Sort Key

Maximum of 5 GSIs per table

GSI can be created anytime

GSIs have dedicated WCU and RCU

Eventually consistent reads only

Additional Costs (RCU/WCU & Storage)

