Transaction ID	Student ID	Name	Phone Number	Course ID
1001	101	Virat	9087690871	C123
1002	101	Virat	9087690871	C124
1003	102	Rahul	9678567854	C123
1004	103	Virat	9234560987	C250
1005	102	Rahul	9678567854	C250

Table → storage, Retrieval

KEY

k, v map.get(k)

name, "Virat", "Mann"

age → 19, 20, 31

JAVA

Collection Frame

Map → HashMap

(k, v)

Transaction ID	Student ID	Name	Phone Number	Course ID
1001	101	Virat	9087690871	C123
1002	101	Virat	9087690871	C124
1003	102	Rahul	9678567854	C123
1004	103	Virat	9234560987	C250
1005	102	Rahul	9678567854	C250

SUPER KEY → SUPER SET

Key → 1 column or multiple column

<Transaction ID, Student ID, Name, Phone Number, Course ID>
<Transaction ID, Student ID, Phone Number, Course ID>
<Transaction ID, Student ID, Name, Course ID>
<Transaction ID, Student ID, Course ID>
<Transaction ID, Name, Phone Number, Course ID>
<Transaction ID, Phone Number, Course ID>
<Transaction ID, Phone Number>
<Transaction ID, Course ID>
<Transaction ID, Student ID>
<Transaction ID, Name>
<Transaction ID, Student ID, Name>
<Transaction ID, Name, Course ID>
<Transaction ID, Name, Phone Number>
<Transaction ID, Student ID, Phone Number>
<Student, Course ID, Name, Phone Number>
<Student ID, Course ID, Name>
<Student ID, Course ID, Phone Number>
<Phone Number, Course ID, Name>
<Student ID, Course ID>
<Phone Number, Course ID>
<Transaction ID>

candidate keys

Candidate Keys

Candidate keys are attributes or combinations of attributes that can uniquely identify each row of a table. Such a combination includes only useful attributes. It is a subset of super keys.

Transaction ID	Student ID	Name	Phone Number	Course ID
1001	101	Virat	9087690871	C123
1002	101	Virat	9087690871	C124
1003	102	Rahul	9678567854	C123
1004	103	Virat	9234560987	C250
1005	102	Rahul	9678567854	C250

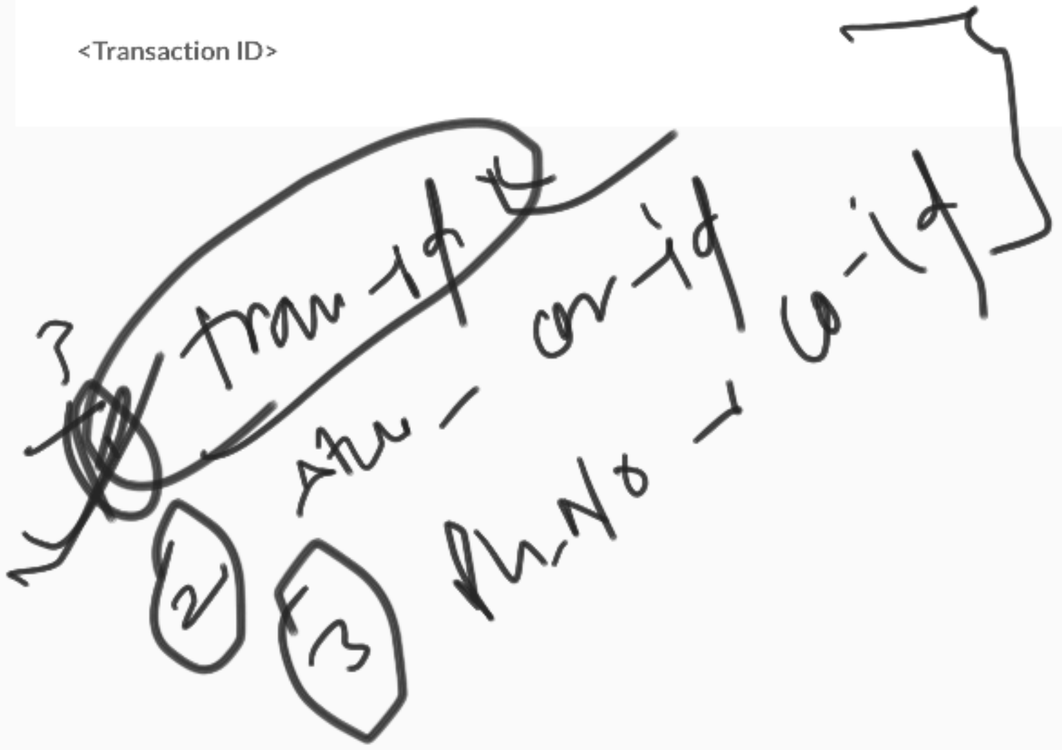
<Transaction ID>
<Student ID, Course ID>
<Phone Number, Course ID>

Primary Keys

Primary keys are attributes or combinations of attributes that can uniquely identify each row of a table. Such a combination includes one of the candidate keys.

Transaction ID	Student ID	Name	Phone Number	Course ID
1001	101	Virat	9087690871	C123
1002	101	Virat	9087690871	C124
1003	102	Rahul	9678567854	C123
1004	103	Virat	9234560987	C250
1005	102	Rahul	9678567854	C250

<Transaction ID>

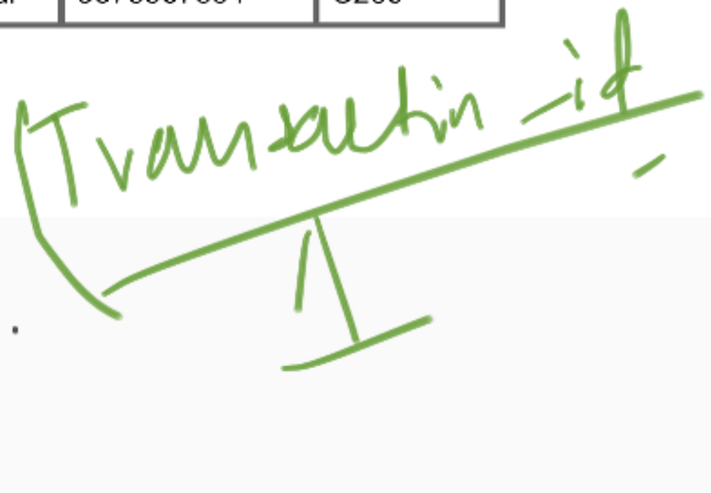


Composite Keys

Composite keys are a combination of attributes that can uniquely identify each row of a table.

Transaction ID	Student ID	Name	Phone Number	Course ID
1001	101	Virat	9087690871	C123
1002	101	Virat	9087690871	C124
1003	102	Rahul	9678567854	C123
1004	103	Virat	9234560987	C250
1005	102	Rahul	9678567854	C250

<Student ID, Course ID>
<Phone Number, Course ID>



Foreign Keys

Transaction ID	Student ID	Name	Phone Number	Course ID
1001	101	Virat	9087690871	C123
1002	101	Virat	9087690871	C124
1003	102	Rahul	9678567854	C123
1004	103	Virat	9234560987	C250
1005	102	Rahul	9678567854	C250

Course ID	Course Name
C123	Marketing
C124	Data Science
C250	Product management