MAIN ACTIVITY:

```kotlin
package com.example.ca1cse227

import android.os.Bundle
import android.widget.Button
import android.widget.EditText
import android.widget.TextView
import android.widget.Toast
import androidx.appcompat.app.AppCompatActivity
import com.google.firebase.database.DatabaseReference
import com.google.firebase.database.FirebaseDatabase

class MainActivity : AppCompatActivity() {

    private lateinit var database: DatabaseReference

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        database = FirebaseDatabase.getInstance().getReference("Students")

        val etName = findViewById<EditText>(R.id.etName)
        val etRollNumber = findViewById<EditText>(R.id.etRollNumber)
        val etMarks = findViewById<EditText>(R.id.etMarks)
        val btnAdd = findViewById<Button>(R.id.btnAdd)
        val btnRead = findViewById<Button>(R.id.btnRead)
        val btnUpdate = findViewById<Button>(R.id.btnUpdate)
        val btnDelete = findViewById<Button>(R.id.btnDelete)
        val tvResult = findViewById<TextView>(R.id.tvResult)

        btnAdd.setOnClickListener {
            val name = etName.text.toString()
            val rollNumber = etRollNumber.text.toString()
            val marks = etMarks.text.toString()
```

```kotlin
            if (name.isNotEmpty() && rollNumber.isNotEmpty() && marks.isNotEmpty()) {
                val student = Student(rollNumber, name, rollNumber, marks)
                database.child(rollNumber).setValue(student).addOnSuccessListener {
                    etName.text.clear()
                    etRollNumber.text.clear()
                    etMarks.text.clear()
                    Toast.makeText(this, "Successfully Saved", Toast.LENGTH_SHORT).show()
                }.addOnFailureListener {
                    Toast.makeText(this, "Failed to Save", Toast.LENGTH_SHORT).show()
                }
            } else {
                Toast.makeText(this, "Please fill all fields", Toast.LENGTH_SHORT).show()
            }
        }


        btnRead.setOnClickListener {
            val rollNumber = etRollNumber.text.toString()
            if (rollNumber.isNotEmpty()) {
                database.child(rollNumber).get().addOnSuccessListener {
                    if (it.exists()) {
                        val name = it.child("name").value
                        val marks = it.child("marks").value
                        val roll = it.child("rollNumber").value
                        tvResult.text = "Name: $name\nRoll No: $roll\nMarks: $marks"
                        Toast.makeText(this, "Successfully Read", Toast.LENGTH_SHORT).show()
                    } else {
                        Toast.makeText(this, "Student does not exist", Toast.LENGTH_SHORT).show()
                    }
                }.addOnFailureListener {
                    Toast.makeText(this, "Failed to Read", Toast.LENGTH_SHORT).show()
                }
            } else {
                Toast.makeText(this, "Please enter Roll Number to read",
Toast.LENGTH_SHORT).show()
            }
        }


        btnUpdate.setOnClickListener {
```

```kotlin
        val name = etName.text.toString()
        val rollNumber = etRollNumber.text.toString()
        val marks = etMarks.text.toString()

        if (rollNumber.isNotEmpty()) {
            val studentUpdates = mutableMapOf<String, Any>()
            if (name.isNotEmpty()) studentUpdates["name"] = name
            if (marks.isNotEmpty()) studentUpdates["marks"] = marks

            if (studentUpdates.isNotEmpty()) {

database.child(rollNumber).updateChildren(studentUpdates).addOnSuccessListener {
                etName.text.clear()
                etRollNumber.text.clear()
                etMarks.text.clear()
                Toast.makeText(this, "Successfully Updated", Toast.LENGTH_SHORT).show()
            }.addOnFailureListener {
                Toast.makeText(this, "Failed to Update", Toast.LENGTH_SHORT).show()
            }
            }
        } else {
            Toast.makeText(this, "Please enter Roll Number to update",
Toast.LENGTH_SHORT).show()
        }
    }

    btnDelete.setOnClickListener {
        val rollNumber = etRollNumber.text.toString()
        if (rollNumber.isNotEmpty()) {
            database.child(rollNumber).removeValue().addOnSuccessListener {
                etRollNumber.text.clear()
                tvResult.text = ""
                Toast.makeText(this, "Successfully Deleted", Toast.LENGTH_SHORT).show()
            }.addOnFailureListener {
                Toast.makeText(this, "Failed to Delete", Toast.LENGTH_SHORT).show()
            }
        } else {
            Toast.makeText(this, "Please enter Roll Number to delete",
```

Toast.*LENGTH_SHORT*).show()
        }
    }
  }
}

Activity Main:
```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:app="http://schemas.android.com/apk/res-auto"
  xmlns:tools="http://schemas.android.com/tools"
  android:id="@+id/main"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:orientation="vertical"
  android:padding="16dp"
  tools:context=".MainActivity">

  <EditText
    android:id="@+id/etName"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Name" />

  <EditText
    android:id="@+id/etRollNumber"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Roll Number" />

  <EditText
    android:id="@+id/etMarks"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Marks" />

  <LinearLayout
```

```xml
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal">

    <Button
        android:id="@+id/btnAdd"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Add" />

    <Button
        android:id="@+id/btnUpdate"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Update" />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal">

    <Button
        android:id="@+id/btnDelete"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Delete" />

    <Button
        android:id="@+id/btnRead"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Read" />
```

```
    </LinearLayout>

    <TextView
        android:id="@+id/tvResult"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp"
        android:text="" />

</LinearLayout>
```

Data Class:

```
package com.example.ca1cse227

data class Student(
    val id: String? = null,
    val name: String? = null,
    val rollNumber: String? = null,
    val marks: String? = null
)
```

Screenshots:

adsfasd

23432

12

Add　　　**Update**

Delete　　　**Read**

Name: adsfasd
Roll No: 23432
Marks: 12

☰

Successfully Read

adsfasd

23432

12

Add

Update

Delete

Read

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