**Haricharan**

**205001043**

**EXERCISE 4**

**ANDROID APPLICATION DEVELOPMENT USING DATABASE**

**AIM:**

Develop a Product information application in Android that enables to perform CRUD operations on data stored in SQLite Database.

**COMPONENTS USED:**

**ANDROID WIDGETS:**

● TextView

● EditView

● RadioGroup

● RadioButton

● Spinner

● Button

**LAYOUTS USED:**

● LinearLayout (Vertical)

● LinearLayout (Horizontal)

● TableLayout

● ConstraintLayout

**ACTIVITY AND INTENTS USED:**

**Activities:**

● MainActivity JAVA Class

● InsertActivity JAVA Class

● UpdateActivity JAVA Class

● DeleteActivity JAVA Class

● RetrieveActivity JAVA Class

● DisplayActivity JAVA Class

**Intents:**

● Intent between MainActivity JAVA Class (sender) and InsertActivity JAVA Class (receiver)

● Intent between MainActivity JAVA Class (sender) and UpdateActivity JAVA Class (receiver)

● Intent between MainActivity JAVA Class (sender) and DeleteActivity JAVA Class (receiver)

● Intent between MainActivity JAVA Class (sender) and RetrieveActivity JAVA Class (receiver)

● Intent between RetrieveActivity JAVA Class (sender) and DisplayActivity JAVA Class (receiver)

● Intent between MainActivity JAVA Class (sender) and DisplayActivity JAVA Class (receiver)

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**CODE:**

**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:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

tools:context=".MainActivity" >

<LinearLayout

android:layout\_width="match\_parent"

android:layout\_height="150dp"

android:orientation="horizontal">

<TextView

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:gravity="center|center\_vertical|center\_horizontal" android:text="Product Information"

android:textColor="#000000"

android:textSize="40sp"

android:textStyle="bold"

android:typeface="monospace" />

</LinearLayout>

<Button

android:id="@+id/button\_insert"

android:layout\_width="200dp"

android:layout\_height="wrap\_content"

android:layout\_marginTop="80dp"

android:layout\_gravity="center|center\_horizontal"

android:backgroundTint="#578004"

android:text="Insert"

android:textColor="#000000"

android:textSize="20sp"

android:textStyle="bold"

android:typeface="monospace" />

<Button

android:id="@+id/button\_update"

android:layout\_width="200dp"

android:layout\_height="wrap\_content"

android:layout\_marginTop="25dp"

android:layout\_gravity="center|center\_horizontal"

android:backgroundTint="#578004"

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android:text="Update"

android:textColor="#000000"

android:textSize="20sp"

android:textStyle="bold"

android:typeface="monospace" />

<Button

android:id="@+id/button\_delete"

android:layout\_width="200dp"

android:layout\_height="wrap\_content"

android:layout\_marginTop="25dp"

android:layout\_gravity="center|center\_horizontal"

android:backgroundTint="#578004"

android:text="Delete"

android:textColor="#000000"

android:textSize="20sp"

android:textStyle="bold"

android:typeface="monospace" />

<Button

android:id="@+id/button\_retrieve"

android:layout\_width="200dp"

android:layout\_height="wrap\_content"

android:layout\_marginTop="25dp"

android:layout\_gravity="center|center\_horizontal"

android:backgroundTint="#578004"

android:text="Retrieve"

android:textColor="#000000"

android:textSize="20sp"

android:textStyle="bold"

android:typeface="monospace" />

<Button

android:id="@+id/button\_retrieve\_all"

android:layout\_width="200dp"

android:layout\_height="wrap\_content"

android:layout\_gravity="center|center\_horizontal"

android:layout\_marginTop="25dp"

android:backgroundTint="#578004"

android:text="Retrieve All"

android:textColor="#000000"

android:textSize="20sp"

android:textStyle="bold"

android:typeface="monospace" />

</LinearLayout>

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**activity\_insert.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:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

tools:context=".InsertActivity">

<LinearLayout

android:layout\_width="match\_parent"

android:layout\_height="80dp"

android:orientation="horizontal">

<TextView

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:gravity="center|center\_vertical|center\_horizontal" android:text="Insert"

android:textColor="#578004"

android:textSize="36sp"

android:textStyle="bold"

android:typeface="monospace" />

</LinearLayout>

<TableLayout

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_margin="50dp">

<TableRow

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:minHeight="80dp">

<TextView

android:id="@+id/product\_id"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="24dp"

android:gravity="center|left"

android:text="Product\nID"

android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace" />

**Haricharan**

**205001043**

<EditText

android:id="@+id/entered\_product\_id"

android:layout\_width="200dp"

android:layout\_height="match\_parent"

android:layout\_marginStart="24dp"

android:inputType="number"

android:minHeight="80dp"

android:text=""

android:textColor="#578004"

android:textSize="16sp"

android:textStyle="bold" />

</TableRow>

<TableRow

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:minHeight="80dp">

<TextView

android:id="@+id/product\_name"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="24dp"

android:gravity="center|left"

android:text="Product\nName"

android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace" />

<Spinner

android:id="@+id/entered\_product\_name"

android:layout\_width="50dp"

android:layout\_height="match\_parent"

android:layout\_marginStart="24dp"

android:gravity="center|center\_horizontal|center\_vertical" android:textAlignment="center"

android:textColor="#578004"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace" />

</TableRow>

<TableRow

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

**Haricharan**

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android:minHeight="150dp">

<TextView

android:id="@+id/product\_brand"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="24dp"

android:layout\_marginTop="10dp"

android:gravity="center|left"

android:text="Product\nBrand"

android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace" />

<RadioGroup

android:id="@+id/brand"

android:layout\_width="50dp"

android:layout\_height="match\_parent"

android:layout\_marginStart="24dp">

<RadioButton

android:id="@+id/brand1"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="Brand 1"

android:textColor="#578004"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace" />

<RadioButton

android:id="@+id/brand2"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="Brand 2"

android:textColor="#578004"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace" />

<RadioButton

android:id="@+id/brand3"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="Brand 3"

android:textColor="#578004"

android:textSize="16sp"

android:textStyle="bold"

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android:typeface="monospace" />

</RadioGroup>

</TableRow>

<TableRow

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:minHeight="80dp">

<TextView

android:id="@+id/product\_description"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="24dp"

android:gravity="center|left"

android:text="Product\nDescription"

android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace" />

<EditText

android:id="@+id/entered\_product\_description"

android:layout\_width="200dp"

android:layout\_height="match\_parent"

android:layout\_marginStart="24dp"

android:inputType="text"

android:minHeight="80dp"

android:text=""

android:textColor="#578004"

android:textSize="16sp"

android:textStyle="bold" />

</TableRow>

<TableRow

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:minHeight="80dp">

<TextView

android:id="@+id/product\_price"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="24dp"

android:gravity="center|left"

android:text="Product\nPrice"

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android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace" />

<EditText

android:id="@+id/entered\_product\_price"

android:layout\_width="200dp"

android:layout\_height="match\_parent"

android:layout\_marginStart="24dp"

android:inputType="number"

android:minHeight="80dp"

android:text=""

android:textColor="#578004"

android:textSize="16sp"

android:textStyle="bold" />

</TableRow>

</TableLayout>

<androidx.constraintlayout.widget.ConstraintLayout

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<Button

android:id="@+id/cancel"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="77dp"

android:layout\_marginTop="16dp"

android:layout\_marginEnd="228dp"

android:layout\_marginBottom="38dp"

android:backgroundTint="#578004"

android:text="Cancel"

android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="1.0"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent"

app:layout\_constraintVertical\_bias="0.2" />

<Button

android:id="@+id/insert"

android:layout\_width="wrap\_content"

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android:layout\_height="wrap\_content"

android:layout\_marginStart="222dp"

android:layout\_marginTop="15dp"

android:layout\_marginEnd="83dp"

android:layout\_marginBottom="39dp"

android:backgroundTint="#578004"

android:text="Insert"

android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="1.0"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent"

app:layout\_constraintVertical\_bias="0.22" />

<TextView

android:id="@+id/error"

android:layout\_width="wrap\_content"

android:layout\_height="32dp"

android:layout\_marginStart="205dp"

android:layout\_marginTop="64dp"

android:layout\_marginEnd="206dp"

android:layout\_marginBottom="19dp"

android:gravity="center|center\_vertical|center\_horizontal" android:textColor="#990000"

android:textSize="16sp"

android:textStyle="bold|italic"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>

</LinearLayout>

**activity\_update.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:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

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tools:context=".UpdateActivity">

<LinearLayout

android:layout\_width="match\_parent"

android:layout\_height="80dp"

android:orientation="horizontal">

<TextView

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:gravity="center|center\_vertical|center\_horizontal" android:text="Update"

android:textColor="#578004"

android:textSize="36sp"

android:textStyle="bold"

android:typeface="monospace" />

</LinearLayout>

<TableLayout

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_margin="50dp">

<TableRow

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:layout\_marginTop="50dp"

android:minHeight="80dp">

<TextView

android:id="@+id/product\_id"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="24dp"

android:gravity="center|left"

android:text="Product\nID"

android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace" />

<EditText

android:id="@+id/entered\_product\_id"

android:layout\_width="200dp"

android:layout\_height="match\_parent"

android:layout\_marginStart="24dp"

android:inputType="number"

android:minHeight="80dp"

**Haricharan**

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android:text=""

android:textColor="#578004"

android:textSize="16sp"

android:textStyle="bold" />

</TableRow>

<TableRow

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:layout\_marginTop="10dp"

android:minHeight="80dp">

<TextView

android:id="@+id/product\_price"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="24dp"

android:gravity="center|left"

android:text="Product\nPrice"

android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace" />

<EditText

android:id="@+id/entered\_product\_price"

android:layout\_width="200dp"

android:layout\_height="match\_parent"

android:layout\_marginStart="24dp"

android:inputType="number"

android:minHeight="80dp"

android:text=""

android:textColor="#578004"

android:textSize="16sp"

android:textStyle="bold" />

</TableRow>

</TableLayout>

<androidx.constraintlayout.widget.ConstraintLayout

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<Button

android:id="@+id/cancel"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

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android:layout\_marginStart="77dp"

android:layout\_marginTop="16dp"

android:layout\_marginEnd="228dp"

android:layout\_marginBottom="38dp"

android:backgroundTint="#578004"

android:text="Cancel"

android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="1.0"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent"

app:layout\_constraintVertical\_bias="0.2" />

<Button

android:id="@+id/update"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="222dp"

android:layout\_marginTop="15dp"

android:layout\_marginEnd="83dp"

android:layout\_marginBottom="39dp"

android:backgroundTint="#578004"

android:text="Update"

android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.0"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent"

app:layout\_constraintVertical\_bias="0.2" />

<TextView

android:id="@+id/error"

android:layout\_width="wrap\_content"

android:layout\_height="32dp"

android:layout\_marginStart="140dp"

android:layout\_marginTop="64dp"

android:layout\_marginEnd="271dp"

android:layout\_marginBottom="19dp"

android:gravity="center|center\_vertical|center\_horizontal" android:textColor="#990000"

android:textSize="16sp"

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android:textStyle="bold|italic"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.0"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent"

app:layout\_constraintVertical\_bias="0.341" />

</androidx.constraintlayout.widget.ConstraintLayout>

</LinearLayout>

**activity\_delete.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:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

tools:context=".DeleteActivity">

<LinearLayout

android:layout\_width="match\_parent"

android:layout\_height="80dp"

android:orientation="horizontal">

<TextView

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:gravity="center|center\_vertical|center\_horizontal" android:text="Delete"

android:textColor="#578004"

android:textSize="36sp"

android:textStyle="bold"

android:typeface="monospace" />

</LinearLayout>

<TableLayout

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_margin="50dp">

<TableRow

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

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android:layout\_marginTop="50dp"

android:minHeight="80dp">

<TextView

android:id="@+id/product\_id"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="24dp"

android:gravity="center|left"

android:text="Product\nID"

android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace" />

<EditText

android:id="@+id/entered\_product\_id"

android:layout\_width="200dp"

android:layout\_height="match\_parent"

android:layout\_marginStart="24dp"

android:inputType="number"

android:minHeight="80dp"

android:text=""

android:textColor="#578004"

android:textSize="16sp"

android:textStyle="bold" />

</TableRow>

</TableLayout>

<androidx.constraintlayout.widget.ConstraintLayout

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<Button

android:id="@+id/cancel"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="77dp"

android:layout\_marginTop="16dp"

android:layout\_marginEnd="228dp"

android:layout\_marginBottom="38dp"

android:backgroundTint="#578004"

android:text="Cancel"

android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace"

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app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="1.0"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent"

app:layout\_constraintVertical\_bias="0.2" />

<Button

android:id="@+id/delete"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="222dp"

android:layout\_marginTop="15dp"

android:layout\_marginEnd="83dp"

android:layout\_marginBottom="39dp"

android:backgroundTint="#578004"

android:text="Delete"

android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.0"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent"

app:layout\_constraintVertical\_bias="0.2" />

<TextView

android:id="@+id/error"

android:layout\_width="wrap\_content"

android:layout\_height="32dp"

android:layout\_marginStart="140dp"

android:layout\_marginTop="64dp"

android:layout\_marginEnd="271dp"

android:layout\_marginBottom="19dp"

android:gravity="center|center\_vertical|center\_horizontal" android:textColor="#990000"

android:textSize="16sp"

android:textStyle="bold|italic"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.0"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent"

app:layout\_constraintVertical\_bias="0.341" />

</androidx.constraintlayout.widget.ConstraintLayout>

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</LinearLayout>

**activity\_retrieve.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:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

tools:context=".RetrieveActivity">

<LinearLayout

android:layout\_width="match\_parent"

android:layout\_height="80dp"

android:orientation="horizontal">

<TextView

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:gravity="center|center\_vertical|center\_horizontal" android:text="Retrieve"

android:textColor="#578004"

android:textSize="36sp"

android:textStyle="bold"

android:typeface="monospace" />

</LinearLayout>

<TableLayout

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:layout\_margin="15dp">

<TableRow

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:layout\_margin="50dp"

android:minHeight="80dp">

<TextView

android:id="@+id/product\_id"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="24dp"

android:gravity="center|left"

android:text="Product\nID"

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android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace" />

<EditText

android:id="@+id/entered\_product\_id"

android:layout\_width="200dp"

android:layout\_height="match\_parent"

android:layout\_marginStart="24dp"

android:inputType="number"

android:minHeight="80dp"

android:text=""

android:textColor="#578004"

android:textSize="16sp"

android:textStyle="bold" />

</TableRow>

</TableLayout>

<androidx.constraintlayout.widget.ConstraintLayout

android:layout\_width="match\_parent"

android:layout\_height="match\_parent">

<Button

android:id="@+id/cancel"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_marginStart="77dp"

android:layout\_marginTop="16dp"

android:layout\_marginEnd="228dp"

android:layout\_marginBottom="38dp"

android:backgroundTint="#578004"

android:text="Cancel"

android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="1.0"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent"

app:layout\_constraintVertical\_bias="0.2" />

<Button

android:id="@+id/retrieve"

android:layout\_width="wrap\_content"

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android:layout\_height="wrap\_content"

android:layout\_marginStart="222dp"

android:layout\_marginTop="15dp"

android:layout\_marginEnd="83dp"

android:layout\_marginBottom="39dp"

android:backgroundTint="#578004"

android:text="Retrieve"

android:textColor="#000000"

android:textSize="16sp"

android:textStyle="bold"

android:typeface="monospace"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.0"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent"

app:layout\_constraintVertical\_bias="0.2" />

<TextView

android:id="@+id/error"

android:layout\_width="wrap\_content"

android:layout\_height="32dp"

android:layout\_marginStart="140dp"

android:layout\_marginTop="64dp"

android:layout\_marginEnd="271dp"

android:layout\_marginBottom="19dp"

android:gravity="center|center\_vertical|center\_horizontal" android:textColor="#990000"

android:textSize="16sp"

android:textStyle="bold|italic"

app:layout\_constraintBottom\_toBottomOf="parent"

app:layout\_constraintEnd\_toEndOf="parent"

app:layout\_constraintHorizontal\_bias="0.0"

app:layout\_constraintStart\_toStartOf="parent"

app:layout\_constraintTop\_toTopOf="parent"

app:layout\_constraintVertical\_bias="0.341" />

</androidx.constraintlayout.widget.ConstraintLayout>

</LinearLayout>

**activity\_display.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:layout\_width="match\_parent"

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android:layout\_height="match\_parent"

android:orientation="vertical"

tools:context=".DisplayActivity">

<LinearLayout

android:layout\_width="match\_parent"

android:layout\_height="80dp"

android:orientation="horizontal">

<TextView

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:gravity="center|center\_vertical|center\_horizontal" android:text="Record"

android:textColor="#578004"

android:textSize="36sp"

android:textStyle="bold"

android:typeface="monospace" />

</LinearLayout>

<ScrollView

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content">

<LinearLayout

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:orientation="vertical">

<TextView

android:id="@+id/record"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_margin="50dp"

android:text=""

android:textSize="16sp"

android:textColor="#000000"

android:textStyle="bold"

android:typeface="monospace" />

<Button

android:id="@+id/back"

android:layout\_width="200dp"

android:layout\_height="50dp"

android:layout\_margin="50dp"

android:layout\_gravity="center"

android:text="Back"

android:textColor="#000000"

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android:textSize="16sp"

android:textStyle="bold"

android:backgroundTint="#578004" />

</LinearLayout>

</ScrollView>

</LinearLayout>

**MainActivity.java**

package com.example.exercise4;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.database.Cursor;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

public class MainActivity extends AppCompatActivity {

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

// Button create = (Button) findViewById(R.id.button\_create); // create.setOnClickListener(new View.OnClickListener() { // @Override

// public void onClick(View view) {

//

// DBHelper db = new DBHelper(getApplicationContext()); // }

// });

Button insert = (Button) findViewById(R.id.button\_insert); insert.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View view) {

Intent i = new Intent(MainActivity.this,

InsertActivity.class);

startActivity(i);

}

});

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Button update = (Button) findViewById(R.id.button\_update); update.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View view) {

Intent i = new Intent(MainActivity.this,

UpdateActivity.class);

startActivity(i);

}

});

Button delete = (Button) findViewById(R.id.button\_delete); delete.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View view) {

Intent i = new Intent(MainActivity.this,

DeleteActivity.class);

startActivity(i);

}

});

Button retrieve = (Button) findViewById(R.id.button\_retrieve); retrieve.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View view) {

Intent i = new Intent(MainActivity.this,

RetrieveActivity.class);

startActivity(i);

}

});

Button retrieve\_all = (Button)

findViewById(R.id.button\_retrieve\_all);

retrieve\_all.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View view) {

DBHelper db = new DBHelper(getApplicationContext());

Cursor record = db.retrieve\_all\_records();

String record\_details = "";

while(record.moveToNext())

{

record\_details += "ID: " + record.getString(0) + "\n";

record\_details += "Name: " + record.getString(1) + "\n";

record\_details += "Brand: " + record.getString(2) + "\n";

record\_details += "Description: " + record.getString(3) +

"\n";

record\_details += "Price: " + record.getString(4) +

"\n\n";

}

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Intent i = new Intent(MainActivity.this,

DisplayActivity.class);

i.putExtra("record\_details", record\_details);

startActivity(i);

}

});

}

}

**InsertActivity.java**

package com.example.exercise4;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.os.Bundle;

import android.view.View;

import android.widget.ArrayAdapter;

import android.widget.Button;

import android.widget.EditText;

import android.widget.RadioGroup;

import android.widget.Spinner;

import android.widget.TextView;

import android.widget.Toast;

public class InsertActivity extends AppCompatActivity {

String brand = "";

String name = "";

String description = "";

String[] product\_items = {"--Select--", "Product 1", "Product 2", "Product 3", "Product 4", "Product 5", "Product 6"}; @Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_insert);

EditText product\_id = (EditText)

findViewById(R.id.entered\_product\_id);

Spinner product\_name = (Spinner)

findViewById(R.id.entered\_product\_name);

ArrayAdapter sp\_item = new ArrayAdapter(this,

androidx.appcompat.R.layout.support\_simple\_spinner\_dropdown\_item, product\_items);

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sp\_item.setDropDownViewResource(androidx.appcompat.R.layout.support\_simple\_sp inner\_dropdown\_item);

product\_name.setAdapter(sp\_item);

RadioGroup product\_brand = findViewById(R.id.brand);

EditText product\_description = (EditText)

findViewById(R.id.entered\_product\_description);

EditText product\_price = (EditText)

findViewById(R.id.entered\_product\_price);

TextView error = (TextView) findViewById(R.id.error);

error.setText("");

Button cancel = (Button) findViewById(R.id.cancel);

cancel.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View view) {

Intent i = new Intent(InsertActivity.this,

MainActivity.class);

startActivity(i);

}

});

Button insert = (Button) findViewById(R.id.insert);

insert.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View view) {

Boolean id\_flag = true, id\_len\_flag = true;

String id = product\_id.getText().toString();

try {

int id\_validation = Integer.parseInt(id);

if(id\_validation / 1000 == 0 || id\_validation / 1000 > 9)

{

id\_len\_flag = false;

}

}

catch (NumberFormatException nfe)

{

id\_flag = false;

}

if(id\_flag == false || id\_len\_flag == false)

{

error.setText("Product ID must be 4 digits");

product\_id.setText("");

}

else

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{

name = product\_name.getSelectedItem().toString();

description = product\_description.getText().toString();

int rid = product\_brand.getCheckedRadioButtonId();

if(rid == R.id.brand1)

{

brand = "Brand 1";

}

else if(rid == R.id.brand2)

{

brand = "Brand 2";

}

else if(rid == R.id.brand3)

{

brand = "Brand 3";

}

String price = product\_price.getText().toString();

Boolean price\_flag = true;

try {

int price\_validation = Integer.parseInt(price);

}

catch(NumberFormatException nfe) {

price\_flag = false;

}

if(price\_flag == false) error.setText("Price should be a

number");

else

{

DBHelper db = new DBHelper(getApplicationContext());

Boolean check\_insert = db.insert\_record(id, name,

brand, description, price);

String x = id + " " + name + " " + brand + " " +

description + " " + price;

if(check\_insert == true)

{

Intent j = new Intent(InsertActivity.this,

MainActivity.class);

startActivity(j);

}

else

{

error.setText("Record could not be inserted!");

product\_id.setText("");

product\_name.setAdapter(sp\_item);

product\_brand.clearCheck();

product\_description.setText("");

product\_price.setText("");

}

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}

}

}

});

}

}

**UpdateActivity.java**

package com.example.exercise4;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

public class UpdateActivity extends AppCompatActivity {

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_update);

EditText product\_id = (EditText)

findViewById(R.id.entered\_product\_id);

EditText product\_price = (EditText)

findViewById(R.id.entered\_product\_price);

TextView error = (TextView) findViewById(R.id.error);

Button update = (Button) findViewById(R.id.update);

update.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View view) {

String id = product\_id.getText().toString();

String price = product\_price.getText().toString();

DBHelper db = new DBHelper(getApplicationContext());

Boolean check = db.update\_record(id, price);

if(check == true)

{

Intent i = new Intent(UpdateActivity.this,

MainActivity.class);

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startActivity(i);

}

else

{

error.setText("Could not update!");

product\_id.setText("");

product\_price.setText("");

}

}

});

Button cancel = (Button) findViewById(R.id.cancel);

cancel.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View view) {

Intent i = new Intent(UpdateActivity.this,

MainActivity.class);

startActivity(i);

}

});

}

}

**DeleteActivity.java**

package com.example.exercise4;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

public class DeleteActivity extends AppCompatActivity {

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_delete);

EditText product\_id = (EditText)

findViewById(R.id.entered\_product\_id);

TextView error = (TextView) findViewById(R.id.error);

Button delete = (Button) findViewById(R.id.delete);

**Haricharan**

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delete.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View view) {

String id = product\_id.getText().toString();

DBHelper db = new DBHelper(getApplicationContext());

Boolean check = db.delete\_record(id);

if(check == true)

{

Intent i = new Intent(DeleteActivity.this,

MainActivity.class);

startActivity(i);

}

else

{

error.setText("Could not delete!");

product\_id.setText("");

}

}

});

Button cancel = (Button) findViewById(R.id.cancel);

cancel.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View view) {

Intent i = new Intent(DeleteActivity.this,

MainActivity.class);

startActivity(i);

}

});

}

}

**RetrieveActivity.java**

package com.example.exercise4;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.database.Cursor;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.TextView;

**Haricharan**

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public class RetrieveActivity extends AppCompatActivity {

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_retrieve);

EditText product\_id = (EditText)

findViewById(R.id.entered\_product\_id);

TextView error = (TextView) findViewById(R.id.error);

Button retrieve = (Button) findViewById(R.id.retrieve);

retrieve.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View view) {

String id = product\_id.getText().toString();

DBHelper db = new DBHelper(getApplicationContext());

Cursor record = db.retrieve\_record(id);

if(record.getCount() != 1)

{

error.setText("Could not retrieve!");

product\_id.setText("");

}

else

{

error.setText("Could retrieve!");

String record\_details = "";

while(record.moveToNext())

{

record\_details += "ID: " + record.getString(0) +

"\n";

record\_details += "Name: " + record.getString(1) +

"\n";

record\_details += "Brand: " + record.getString(2) +

"\n";

record\_details += "Description: " +

record.getString(3) + "\n";

record\_details += "Price: " + record.getString(4) +

"\n\n";

}

Intent i = new Intent(RetrieveActivity.this,

DisplayActivity.class);

i.putExtra("record\_details", record\_details);

startActivity(i);

}

}

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});

Button cancel = (Button) findViewById(R.id.cancel);

cancel.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View view) {

Intent i = new Intent(RetrieveActivity.this,

MainActivity.class);

startActivity(i);

}

});

}

}

**DisplayActivity.java**

package com.example.exercise4;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.TextView;

public class DisplayActivity extends AppCompatActivity {

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_display);

TextView record = (TextView) findViewById(R.id.record);

Intent i = getIntent();

String record\_display = i.getStringExtra("record\_details"); record.setText(record\_display);

Button back = (Button) findViewById(R.id.back);

back.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View view) {

Intent i = new Intent(DisplayActivity.this,

MainActivity.class);

startActivity(i);

}

});

}

**Haricharan**

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}

**DBHelper.java**

package com.example.exercise4;

import androidx.annotation.Nullable;

import androidx.appcompat.app.AppCompatActivity;

import android.content.ContentValues;

import android.content.Context;

import android.database.sqlite.SQLiteDatabase;

import android.database.sqlite.SQLiteOpenHelper;

import android.os.Bundle;

import android.database.Cursor;

public class DBHelper extends SQLiteOpenHelper {

public DBHelper(@Nullable Context context) {

super(context, "ProductDB.db", null, 1);

}

@Override

public void onCreate(SQLiteDatabase db) {

db.execSQL("CREATE TABLE product (" +

"id INT PRIMARY KEY, " +

"name Text, " +

"brand Text, " +

"description Text, " +

"price INT)");

}

@Override

public void onUpgrade(SQLiteDatabase db, int i, int i1) {

db.execSQL("DROP TABLE IF EXISTS product");

}

//Insertion

public Boolean insert\_record(String id, String name, String brand, String description, String price) {

//To get db connection

SQLiteDatabase db = this.getWritableDatabase();

//To write into db

ContentValues content\_value = new ContentValues();

content\_value.put("id", id);

content\_value.put("name", name);

content\_value.put("brand", brand);

content\_value.put("description", description);

content\_value.put("price", price);

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//Execute insertion

Long result = db.insert("product", null, content\_value); if(result == -1) return false;

return true;

}

//Updation

public Boolean update\_record(String id, String price) { //To get db connection

SQLiteDatabase db = this.getWritableDatabase();

//To write into db

ContentValues content\_value = new ContentValues();

content\_value.put("price", price);

Cursor record = db.rawQuery("SELECT \* FROM product WHERE id = ?", new String []{id});

//Execute updation if there is a record to be updated

if(record.getCount() > 0)

{

int result = db.update("product", content\_value, "id = ?", new String []{id});

if(result == -1) return false;

else return true;

}

return false;

}

//Deletion

public Boolean delete\_record(String id) {

//To get db connection

SQLiteDatabase db = this.getWritableDatabase();

Cursor record = db.rawQuery("SELECT \* FROM product WHERE id = ?", new String []{id});

//Execute deletion if there is a record to be deleted

if(record.getCount() > 0)

{

int result = db.delete("product", "id = ?", new String []{id}); if(result == -1) return false;

else return true;

}

return false;

}

//Retrieval

public Cursor retrieve\_record(String id) {

//To get db connection

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SQLiteDatabase db = this.getWritableDatabase();

Cursor record = db.rawQuery("SELECT \* FROM product WHERE id = ?", new String []{id});

return record;

}

//Retrieve all

public Cursor retrieve\_all\_records() {

//To get db connection

SQLiteDatabase db = this.getWritableDatabase();

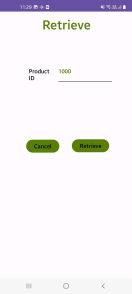
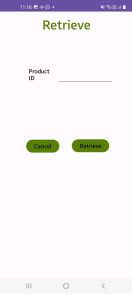
Cursor records = db.rawQuery("SELECT \* FROM product", null); return records;

}

}

**OUTPUT:**

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****

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**BEST PRACTICES:**

● Standard naming conventions

● Suitable comments

● Proper indentation

● Proper user interface which is understandable and easy to navigate ● Use of modularity and functions

**LEARNING OUTCOMES:**

● I learnt the working of Android Studio.

● I learnt about the various widgets.

● I learnt to choose and use the layouts.

● I learnt to use event handlers.

● I learnt to link the main activity and view activity. ● I leart to perform CRUD operations using SQLite database. ● I learnt to run the emulator and debugger.