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Carpenter Cost Estimator App

Overview: The Carpenter Cost Estimator is a simple Android application designed for carpenters and handymen to calculate the estimated cost of small tasks like installing doors, building shelves, and assembling furniture. The app helps professionals quickly determine pricing based on selected materials and labour hours. It simplifies the job quoting process, increases accuracy, and helps ensure fair and transparent cost estimation.

Features:

- **Task Selection**: Choose from different task types (e.g., Install Door, Build Shelf, Assemble Furniture) using radio buttons.
- **Material Selection**: Checkboxes allow users to select required materials (e.g., Wood, Nails, Hinges).
- **Labor Input**: Users input the estimated number of work hours via a text field.
- **Real-Time Calculation**: A calculation button computes the total cost based on material and time inputs.
- **Cost Display**: Final cost is shown in a clearly labeled text view.
- **Error Handling**: Displays helpful messages if inputs are incomplete or invalid, ensuring a smooth user experience.

Material Costs:

- Wood: R500
- Nails: R20
- Hinges: R30

Calculation Logic:

1. The app loops through all selected materials and accumulates their costs.
2. The total material cost is then multiplied by the number of hours entered by the user.
3. The result is displayed in the format: "Total Estimated Cost: RXXX.XX"

Validation & Error Handling:

- Ensures that the user enters a valid number of hours.
- Prompts the user to select at least one material and one task type before calculation.
- Provides informative error messages using Toasts to help guide the user through the correct input process.

UI Design: The interface was designed to be clean, simple, and professional, focusing on user accessibility and ease of use. The following UI components were used:

- **RadioGroup** containing **RadioButtons** for selecting task types: "Install Door", "Build Shelf", and "Assemble Furniture".
- **CheckBoxes** stacked vertically for selecting materials: "Wood", "Nails", and "Hinges".
- A **TextInput (EditText)** for users to input the number of labor hours.
- A **Button** labeled "Calculate Total" to initiate cost computation.
- A **TextView** to clearly display the result to the user.

The layout was implemented using `activity_main.xml` and styled with basic margins, paddings, and alignment to ensure the app looks organized and professional. Each element is spaced for clarity and accessibility, especially for users who may be using the app in work environments.

How the App Works:

1. When the user opens the app, they see the options for task selection, material selection, a field for entering hours, and the calculate button.
2. The user first selects a task from the radio buttons.
3. They then check off the materials they will use for that task.
4. Next, the user inputs how many hours the task is expected to take.
5. When the user taps the "Calculate Total" button, the app verifies that all required fields are filled.
6. The app calculates the material cost by looping through the checkboxes. For each checked material, its cost is added to the total.
7. The total cost is then multiplied by the number of hours to determine the final estimate.
8. The app displays the result in the format: "Total Estimated Cost: R0.00

This process ensures accurate, consistent estimates every time and removes the need for manual calculation, saving the user both time and effort.

Development Process:

1. Created a new Android Studio project with an Empty Activity.
2. Designed the UI layout in `activity_main.xml` using XML elements for buttons, radio groups, checkboxes, and text inputs.
3. Implemented the app logic in `MainActivity.kt` using Kotlin.
4. Bound the UI components using `findViewById` and set an `OnClickListener` to perform input validation and cost calculations.
5. Used a loop to iterate through selected materials and accumulate costs.
6. Displayed the total estimated cost dynamically in the TextView.
7. Included `Toast` messages to guide user actions and handle edge cases.

Dependencies:

- AndroidX libraries for backwards compatibility.

- Kotlin programming language.

Usage Instructions:

1. Select a task type.
2. Check all required materials.
3. Enter the estimated number of labor hours.
4. Tap "Calculate Total".
5. View the final cost displayed on the screen.

Target Audience:

- Carpenters
- Furniture installers
- DIY professionals
- Small home renovation service providers

Future Enhancements:

- Add more materials and task types.
- Include an option to save and export job quotes.
- Add dynamic pricing based on real-time material cost updates.
- Implement dark mode for usability in low-light conditions.
- Add customer details and job reference tracking for professional invoicing.

App Run (Emulator)

The app runs on the emulator.