

Final Practical Projects

The **Final Practical Projects** are designed to assess students' ability to apply the knowledge and skills acquired throughout the **48-Hour Mobile Hardware Repair Course**. Each project simulates real-world repair scenarios commonly encountered in professional mobile service centers. Students are expected to follow industry-standard repair procedures, observe safety practices, document their work, and verify the functionality of repaired devices.

Project 1: Smartphone Disassembly & Assembly

Objective

Develop the ability to safely disassemble and reassemble various smartphone models without damaging internal components.

Learning Outcomes

Students will be able to:

- Follow proper smartphone disassembly procedures.
- Remove and reinstall internal components safely.
- Handle flex cables and connectors correctly.
- Reassemble the smartphone to factory condition.

Practical Tasks

- Power off the smartphone.
- Remove the SIM tray.
- Open the back cover safely.
- Disconnect the battery.
- Remove internal shields and screws.
- Disconnect display, camera, and battery flex cables.
- Reassemble all components.
- Verify successful operation.

Required Tools

- Precision Screwdriver Set

- Plastic Opening Picks
 - Suction Cup
 - Tweezers
 - ESD Wrist Strap
 - Magnetic Screw Mat
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Project 2: Display Replacement

Objective

Replace a damaged LCD or OLED display using professional repair techniques.

Learning Outcomes

Students will be able to:

- Remove damaged displays safely.
- Clean display frames.
- Apply new display adhesive.
- Install and test replacement displays.

Practical Tasks

- Remove broken display.
- Disconnect display connector.
- Clean old adhesive.
- Install replacement display.
- Apply waterproof adhesive.
- Test touch and display functions.

Required Tools

- Heat Gun or Heating Pad
 - Plastic Opening Tools
 - Display Adhesive
 - Tweezers
 - Screwdriver Set
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Project 3: Battery Replacement

Objective

Replace defective smartphone batteries safely while maintaining device integrity.

Learning Outcomes

Students will be able to:

- Evaluate battery condition.
- Remove batteries safely.
- Install replacement batteries.
- Verify charging performance.

Practical Tasks

- Measure battery voltage.
- Disconnect battery connector.
- Remove battery adhesive.
- Install new battery.
- Test charging function.
- Verify battery health.

Required Tools

- Plastic Pry Tool
- Battery Adhesive
- Multimeter
- DC Power Supply
- Screwdriver Set

Project 4: Charging Port Replacement

Objective

Repair charging problems by replacing damaged charging ports or charging boards.

Learning Outcomes

Students will be able to:

- Diagnose charging faults.
- Replace charging connectors.
- Verify charging operation.

Practical Tasks

- Diagnose charging issue.
- Remove charging board.
- Replace charging port or charging board.
- Reconnect flex cables.
- Test charging speed and USB connectivity.

Required Tools

- Hot Air Rework Station
 - Soldering Station
 - Flux
 - Tweezers
 - Digital Microscope
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Project 5: Mobile Motherboard Diagnosis

Objective

Diagnose motherboard faults using professional diagnostic methods.

Learning Outcomes

Students will be able to:

- Identify motherboard sections.
- Trace power circuits.
- Locate faulty components.
- Analyze hardware failures.

Practical Tasks

- Inspect motherboard.
- Identify PMIC, CPU, RAM, and storage.

- Read schematic diagrams.
- Perform board-level inspection.
- Record findings.

Required Tools

- Microscope
 - Board View Software
 - Schematics
 - Multimeter
 - DC Power Supply
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Project 6: Multimeter Testing

Objective

Use a digital multimeter to diagnose smartphone hardware faults.

Learning Outcomes

Students will be able to:

- Measure voltage.
- Perform continuity testing.
- Measure resistance.
- Use diode mode.

Practical Tasks

- Measure battery voltage.
- Test charging circuit.
- Perform continuity tests.
- Identify short circuits.
- Verify repaired circuits.

Required Tools

- Digital Multimeter
- Test Probes
- DC Power Supply

Project 7: Soldering & PCB Repair

Objective

Perform professional soldering and motherboard repair techniques.

Learning Outcomes

Students will be able to:

- Solder and desolder components.
- Replace SMD components.
- Repair PCB tracks.
- Replace connectors and charging ICs.

Practical Tasks

- Practice soldering on training PCB.
- Replace SMD resistor or capacitor.
- Repair damaged PCB track using jumper wire.
- Replace charging connector or charging IC.
- Inspect solder joints.

Required Tools

- Soldering Station
- Hot Air Rework Station
- Flux
- Solder Wire
- Jumper Wire
- Microscope

Project 8: Android Firmware Flashing

Objective

Install official Android firmware and perform software servicing.

Learning Outcomes

Students will be able to:

- Install stock firmware.
- Perform factory reset.
- Backup and restore user data.
- Verify software functionality.

Practical Tasks

- Download correct firmware.
- Flash firmware using approved service tools.
- Perform factory reset.
- Restore backup.
- Test software functions.

Required Software

- Android USB Drivers
 - ADB & Fastboot
 - Samsung Odin
 - SP Flash Tool
 - QFIL/QPST (where applicable)
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Project 9: Water Damage Repair

Objective

Restore a water-damaged smartphone using safe cleaning and diagnostic procedures.

Learning Outcomes

Students will be able to:

- Identify corrosion.
- Clean motherboard components.
- Remove oxidation.
- Test repaired devices.

Practical Tasks

- Inspect water damage.
- Disassemble smartphone.
- Clean PCB using isopropyl alcohol.
- Demonstrate ultrasonic cleaning (if available).
- Dry and inspect motherboard.
- Verify functionality after cleaning.

Required Tools

- Isopropyl Alcohol (90%+)
 - Cleaning Brush
 - Ultrasonic Cleaner (if available)
 - Compressed Air
 - Digital Microscope
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Project 10: Complete Mobile Repair Project

Objective

Demonstrate the complete mobile repair process from diagnosis to final delivery.

Learning Outcomes

Students will be able to:

- Diagnose hardware and software faults.
- Replace faulty components.
- Install firmware when required.
- Perform complete testing.
- Prepare professional repair documentation.
- Present the completed repair.

Practical Tasks

1. Customer Complaint Analysis
2. Visual Inspection
3. Hardware Diagnosis
4. Motherboard Inspection
5. Component Replacement

6. Software Installation (if required)
7. Functional Testing
8. Quality Control Inspection
9. Repair Documentation
10. Final Presentation and Viva

Required Tools & Software

- Complete Mobile Repair Toolkit
- Multimeter
- DC Power Supply
- Microscope
- Soldering Station
- Hot Air Rework Station
- Flashing Software
- Precision Screwdriver Set
- ESD Wrist Strap
- Computer with Mobile Service Software

Final Practical Assessment Criteria

Assessment Area	Marks
Safety & ESD Compliance	10
Tool Handling & Workstation Setup	10
Hardware Diagnosis	15
Component Replacement	20
Soldering & PCB Repair	15
Software Installation & Configuration	10
Functional Testing & Quality Control	10
Documentation & Service Report	5
Viva & Presentation	5
Total	100

Expected Competencies After Completing the Final Projects

Students who successfully complete all practical projects will be able to:

- Safely disassemble and reassemble smartphones using professional techniques.
- Replace displays, batteries, charging ports, cameras, speakers, microphones, and other hardware modules.
- Diagnose motherboard faults using schematics, board views, multimeters, and DC power supplies.
- Perform soldering, desoldering, SMD replacement, and PCB track repairs.
- Recover and repair selected water-damaged devices using appropriate cleaning and inspection methods.
- Install official Android firmware, perform software maintenance, and verify device functionality.
- Prepare accurate repair reports, communicate professionally with customers, and follow quality control procedures.
- Complete a full smartphone repair—from customer intake and fault diagnosis to testing, documentation, and final presentation—using industry-standard tools, safe work practices, and ethical service procedures.