Hi! We are team 858A. We have chosen a black 32GB memory iPhone 7 as part of our Texas Instruments online challenge to disassemble and understand the parts inside.

Introduction

The iPhone 7 is the 10th generation flagship smartphone from Apple. It uses a powerful Apple A10 Fusion system on a chip with two efficiency cores and two high performance cores to maximise processing power while drawing a minimum amount of power. There is a 'plus' variant of our iPhone 7 which has a 5.5-inch screen instead of the 4.7-inch screen on our phone.

We have chosen this smart phone to disassemble because we use smart phones regularly everyday and are curious about what is inside a smart phone.

Our teacher prepared tools and explained safety rules before we started. He assigned different steps to each of our team members, so everyone got a chance to experience the entire process!

Main Components

The most important parts that make up the phone include the battery, logic board, and touchscreen.

The logic board assembly contains the Apple A10 Fusion system on a chip, as well as a bunch of other components on it. There are two Texas Instrument integrated circuits, the 62W8C7P and 65730A0P.

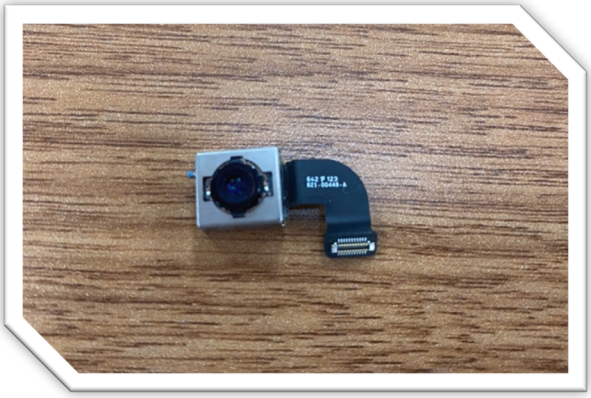
There is also the camera module for the back which includes the flash, and the camera module for the front which includes the ambient light sensor, proximity sensor, and speaker.

Researching Components

Battery: 1960 mAh Lithium-Ion battery which provides power to all the other components.

Display: 4.7 inch big IPS LCD display with a resolution of 750 by 1334 pixels refreshing at 60hz with a peak brightness of 625 nits. The display supports wide colour gamut, multi-touch and 3D touch.

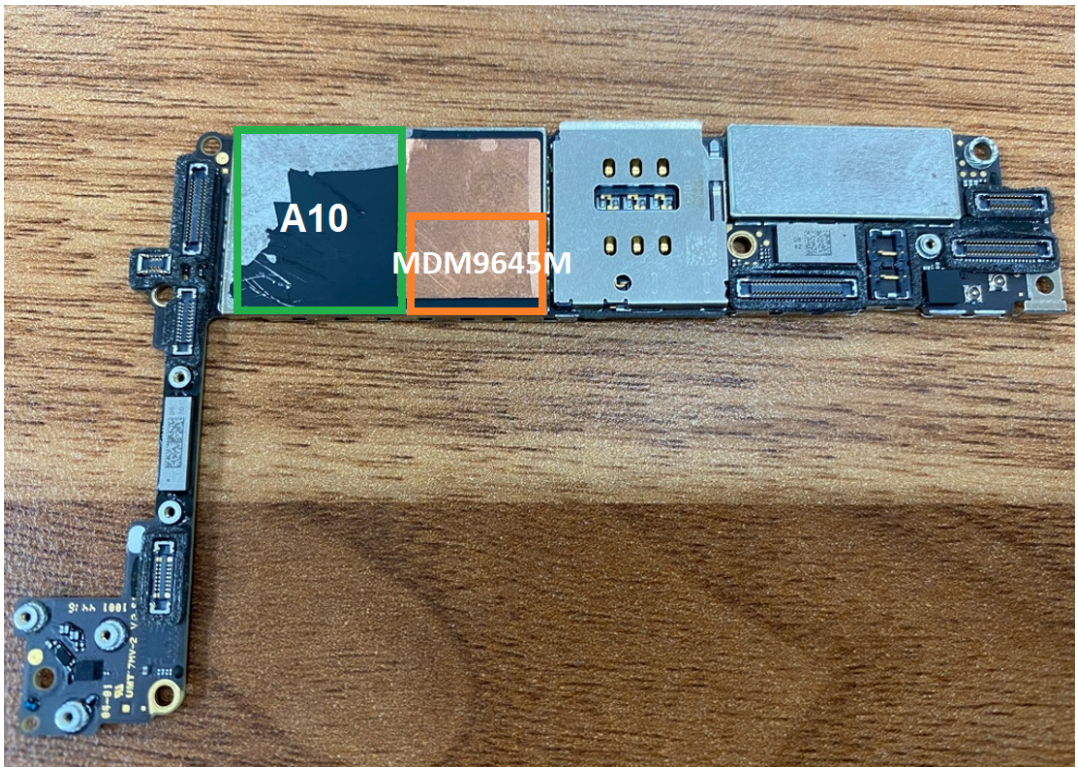
Main Camera: 28mm lens with f/1.8 aperture, which can capture a 12-megapixel photo or 4K video at 30 frames per second, 1080p video at 120fps, or 720p video at 240fps.



Front Camera: 32mm lens with f/2.2 aperture, which can capture a 7-megafixel photo or 1080p video at 30fps.

A10 Fusion: 2.34 GHz 4 core 16 nm architecture ARM chip with 3.3 billion transistors. It contains the CPU, GPU, Motion co-processor, image processor, and low power DDR4 RAM chips. The CPU performs arithmetic calculations for programs and the GPU allows graphics to be displayed. The motion co-processor manages all the data from the accelerometer, gyroscope, and compass. The image processor helps enhance the quality of photos after you take them, and the RAM allows the phone to store data it may regularly need in fast storage.

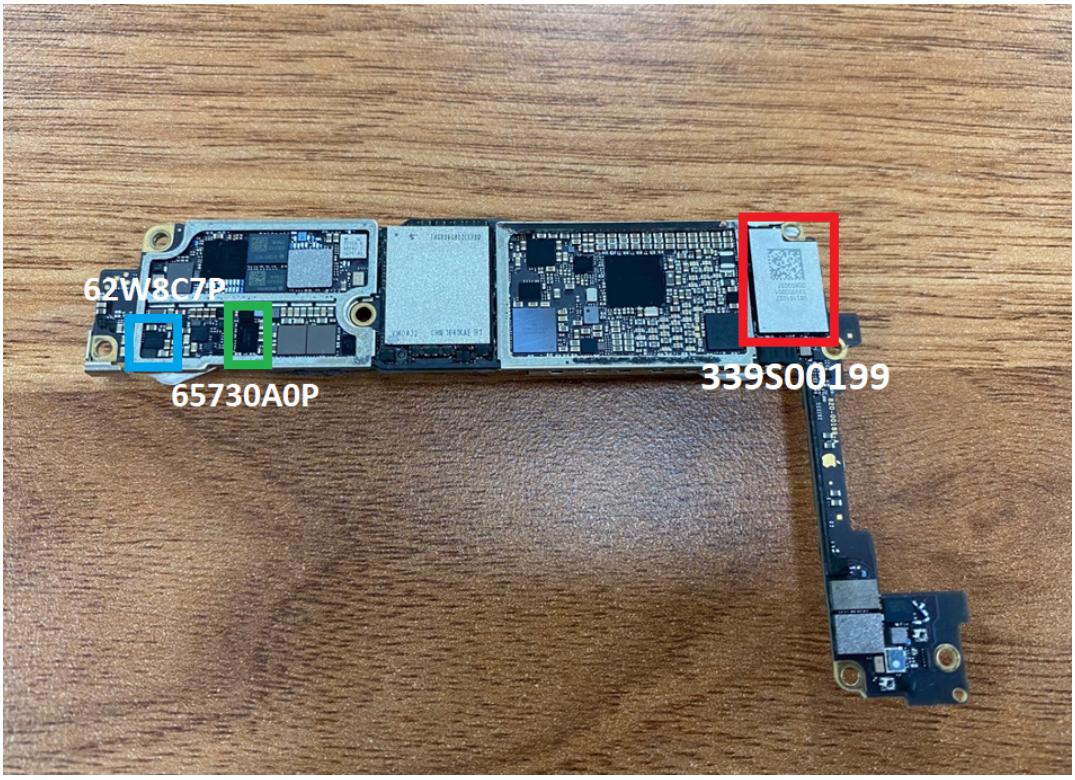
Qualcomm MDM9645M: LTE capable Cat.12 modem to allow the phone to send and receive cellular data signals.



TI 62W8C7P IC: Manages the power to the display, the colours displayed on the display and touch screen.

TI 65730A0P IC: Manages charging to safely charge the battery as quickly as possible and manage battery health through charging.

Murata 339S00199: Wi-Fi and Bluetooth module to allow the phone to use Wi-Fi and Bluetooth.



Conclusion

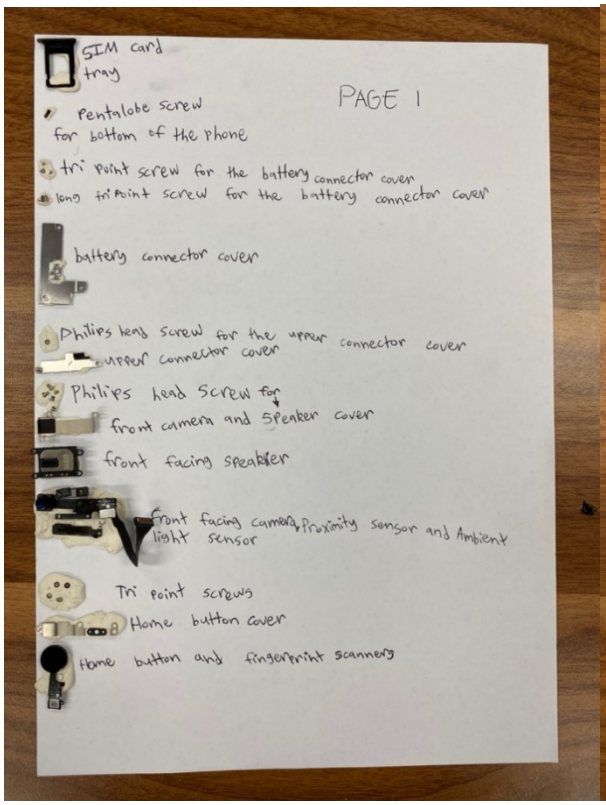
We learnt that even though the iPhone 7 is old, it's still a good phone. The dissembling was time-consuming and complicated. It required enthusiasm, patience, preparation, and organisation. We worked well as a team to learn and work together smoothly and successfully.

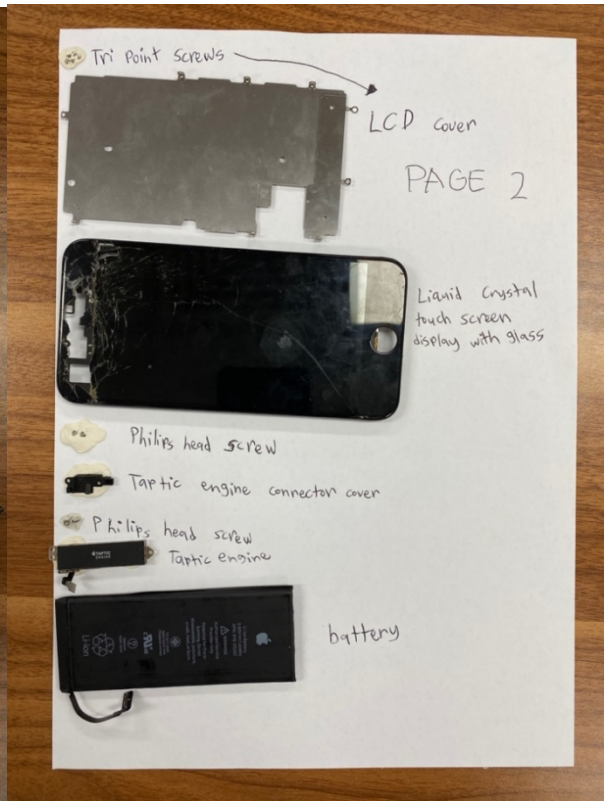
Figure 1 Team Members Linda, Daniel, and Esther with Disassembled Phone

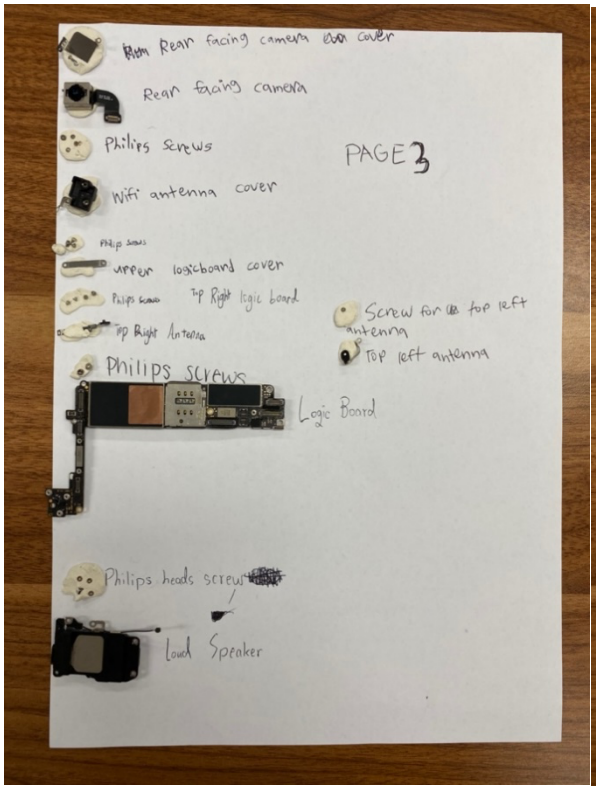
Figure 2Team Member Maxim unscrewing screws

Full List of All Other Components

- SIM Card Tray
- Pentalobe Screw for the bottom of the phone
- Tripoint screw for the battery connector cover
- Battery connector cover
- Philips head screw for the upper connector cover
- Upper connector cover
- Philips head screw for front camera and speaker cover
- Front facing speaker
- Front facing camera module with proximity sensor and ambient light sensor
- Tri point screws for the home button cover
- Home button cover
- Home button and fingerprint scanner
- Tri point screws for the LCD cover
- Liquid crystal touch screen display with glass
- Philips head screws for the taptic engine connector cover
- Taptic engine connector cover
- Philips head screws for the taptic engine
- Taptic engine
- Battery
- Rear facing camera cover
- Rear facing camera
- Philips head screws for the antenna cover
- Antenna cover
- Philips head screws for the upper logic board cover
- Upper logic board cover
- Philips head screw for the top left antenna
- Top left antenna
- Philips head screw for the top right antenna
- Top right antenna
- Philips head screws for the logic board
- Logic board
- Philips head screws for the loud speaker
- Loud speaker
- Philips head screws for the lighting connector cover
- Lightning connector cover
- Lightning connector assembly
- Top right and top left antenna flex cable
- Philips head screws for the cable assembly for buttons and flashlight
- Cable assembly for buttons and flashlight


SIM card tray
PAGE 1
Pentalobe screw for bottom of the phone
tri point screw for the battery connector cover
long tri point screw for the battery connector cover
battery connector cover
Philips head screw for the upper connector cover
upper connector cover
Philips head screw for front camera and speaker cover
front facing speaker
front facing camera, Proximity sensor and Ambient light sensor
Tri point screws
Home button cover
Home button and fingerprint scanner


Tri point screws
LCD cover
PAGE 2
Liquid crystal touch screen display with glass
Philips head screw
Taptic engine connector cover
Philips head screw
Taptic engine
battery


Rear facing camera cover
Rear facing camera
Philips screws
PAGE 3
Wifi antenna cover
Philips screws
upper logicboard cover
Philips screws
Top Right logic board
Top Right Antenna
Screw for top left antenna
Top left antenna
Philips screws
Logic Board
Philips heads screw
Loud Speaker


Screws for the lightning port
cover for lightning connector
PAGE 4
Lightning connector assembly
Antenna flex cable (connects the top left and right together)
Philips head screws
Philips head screws for the
Back cover
Flashlight
Silent Switch
Volume Buttons
Home Button
Cable Assembly for flashlight and buttons