F-16 Fighting Falcon (Description)

(an extract from the 1st volunteer-made self-study English manual)

(first draft)

The F-16 Fighting Falcon originated in an order placed in 1972 for a compact lightweight air-combat single-seat, single-engine supersonic air superiority day jet fighter. It eventually evolved into a highly capable and versatile all-weather multi-role workhorse effective also for ground attack.

The F-16 is a highly maneuverable agile fighter and provides a cost-effective and high-performance weapon system proven effective in air-to-air combat and air-to-surface attack. It possesses sophisticated tracking systems for the interception of other aircraft. It can locate targets in all weather conditions and detect low flying aircraft in radar ground clutter.

The F-16 was given its name of Fighting Falcon on 21 July 1980. Its pilots and crews sometimes use the name Viper instead. This is because of a resemblance to a viper snake as well as to the fictional starfighter from the television program which aired at the time the F-16 entered service.

It is smaller and lighter than its predecessors but uses advanced aerodynamics and avionics, including the first use of a relaxed static stability/fly-by-wire (RSS/FBW) flight control system, to achieve enhanced maneuver performance.

The F-16 provides flight control through its computerized 'fly-by-wire' system, side-stick controller, inertial navigation system, UHF/VHF radios, instrument landing system, AN/APG-66/68 radar warning system, and modular countermeasure pods. The `fly-by-wire` stabilizing system issues continuous commands to control surfaces in the tail and wings.

A `heads-up-display` instrumentation system projects flying and combat data onto a transparent screen in front of the pilot.

The F-16 was the first fighter aircraft purpose-built to pull 9-*g* maneuvers and can reach a maximum speed of over Mach 2. The F-16 can withstand up to nine times the force of gravity - nine G's, with a full load of internal fuel. This proved advantageous when the aircraft's mission changed from solely air-to-air combat to multirole operations.

It has a thrust-to-weight ratio greater than one, providing power to climb and vertical acceleration.

In an air combat role, the F-16's maneuverability and combat radius exceed that of potential threat fighter aircraft. In an air-to-surface role, the F-16 can fly more than 500 miles (860 kilometers), deliver its weapons, defend itself against enemy aircraft, and return to its starting point. An all-weather capability allows it to accurately deliver ordnance during non-visual bombing conditions.

The F-16 two-seat version is typically used for training by a student pilot with an instructor pilot in the rear cockpit.

All F-16s delivered since 1981 have built-in architecture that permit the multi-role flexibility to perform precision strike, night attack and beyond-visual-range interception missions.

(Sources:
https://www.britannica.com/technology
https://en.wikipedia.org/wiki/General_Dynamics_F-16_Fighting_Falcon)