**Lec.14**

**Dr. Hulal Saleh**

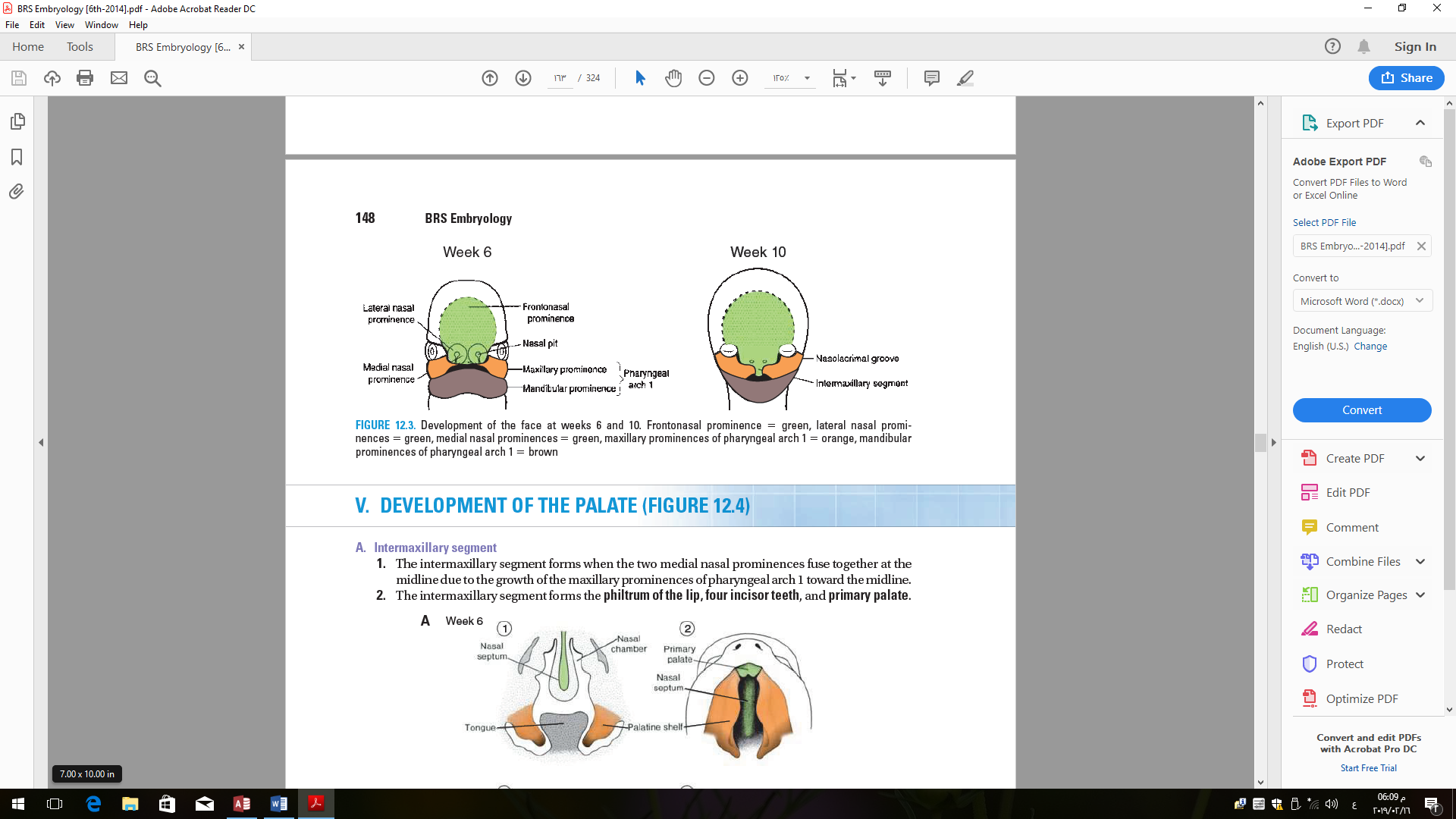
**Development of the face**

The face is formed by three swellings: the **frontonasal prominence, maxillary prominence (pharyngeal arch 1)**, and **mandibular prominence (pharyngeal arch 1)**.Bilateral ectodermal thickenings called **nasal placodes** develop on the ventrolateral aspects of thefrontonasal prominence.

The nasal placodes invaginate into the underlying mesoderm to form the nasal pits, thereby producing a ridge of tissue that forms the **medial nasal prominence** and **lateral nasal prominence**.

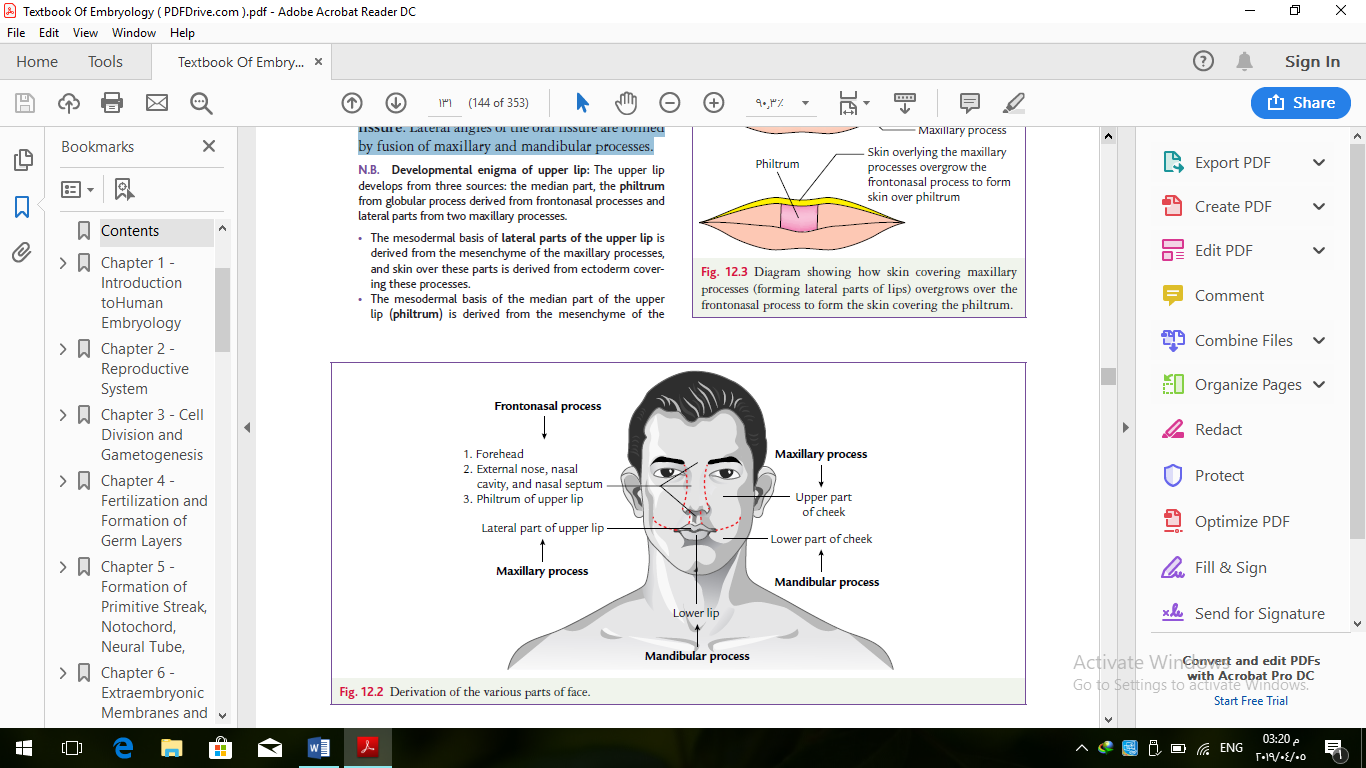
A deep groove called the nasolacrimal groove forms between the maxillary prominence and the lateral nasal prominence and eventually forms the **nasolacrimal duct** and **lacrimal sac**.

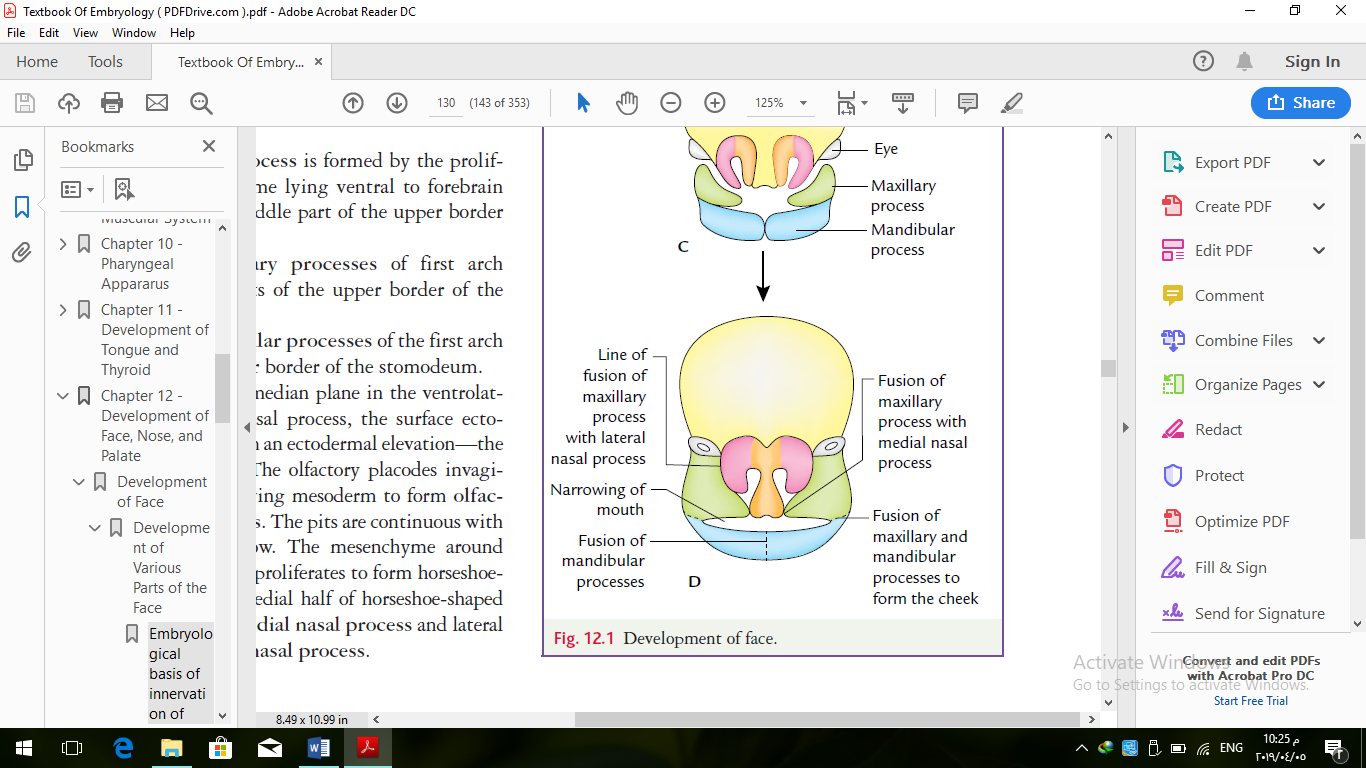
**Intermaxillary segment;** The intermaxillary segment forms when the two medial nasal prominences fuse together at themidline due to the growth of the maxillary prominences of pharyngeal arch 1 toward the midline.The intermaxillary segment forms the **philtrum of the lip, four incisor teeth**, and **primary palate**.



The **various parts of the face develop as follows**:

* The **olfactory pits** grow deeper to form **nasal cavities**.
* The **two maxillary processes** grow medially below developing eyes and fuse with the lateral nasal process to form the **lateral part of the upper** **lip and upper part of the cheek**.
* The two mandibular processes form the **lower lip and lower part of the cheek**.
* The surface opening of stomodeum forms the **oral fissure**. Lateral angles of the oral fissure are formed by fusion of maxillary and mandibular processes.





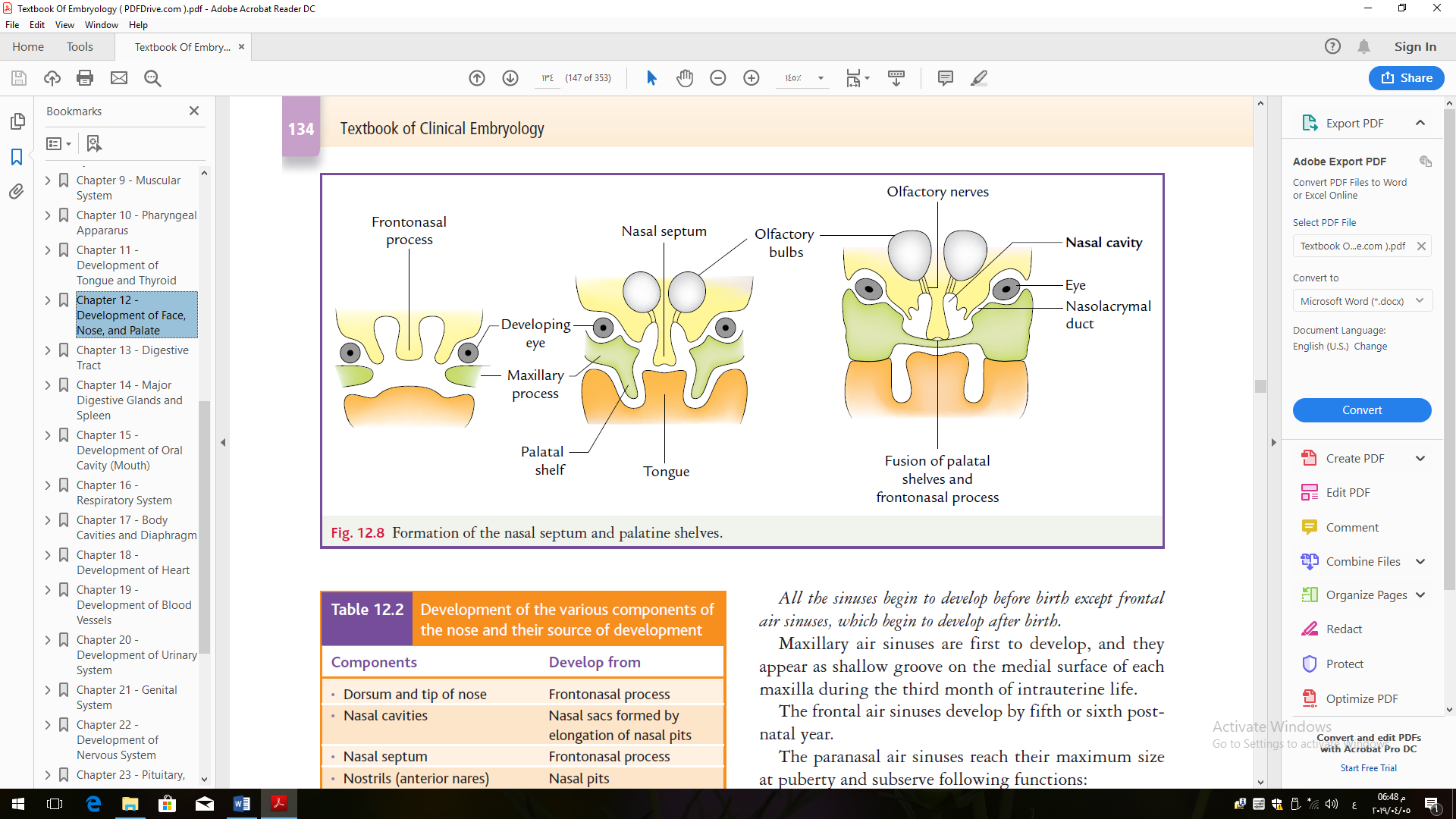
**Secondary palate**

The secondary palate forms from outgrowths of the maxillary prominences of pharyngeal arch 1 called the **palatine shelves**. Initially the palatine shelves project downward on either side of the tongue but later attain a horizontal position and fuse along the **palatine raphe** to form the **secondary palate**.

The primary and secondary palate fuse at the **incisive foramen** to form the **definitive palate**.

Bone develops in both the primary palate and anterior part of the secondary palate. Bone does not develop in the posterior part of the secondary palate, which eventually forms the **soft** **palate** and **uvula**.

The **nasal septum** develops from the medial nasal prominences and fuses with the definitive palate



Anteriorly, the shelves fuse with the triangular primary palate, and the **incisive foramen** is the midline landmark between the primary and secondary palates. At the same time as the palatine shelves fuse, the nasal septum grows down and joins with the cephalic aspect of the newly formed palate.

