In the name of God

Problem 1 :

a) The difference between base.yaml and distribution.yaml is that in distribution.yaml we can find the packages witch are released by Ros2 and related to Ros .for example "acado_vendor" , "ackermann_msgs" , etc .for each case we can find its key in distribution file. On the other side in base.yaml we search for the keys in spd witch are not related to Ros . For example "armadillo" , "asio" , etc.

b)slam_package is situated in distribution.yaml and ffmpeg in base.yaml due to https://github.com/ros/rosdistro/blob/master/humble/distribution.yaml and https://github.com/ros/rosdistro/blob/master/rosdep/base.yaml respectively. Rosdep firstly check the packag.xml to find the key should be installed .we are using "rosdep install --from-paths src -y –ignore-src" to install them .resdep using "apt" to install ffmpeg .

c)IDL stands for "Interface Definition Language" and it is used to define the structure and types of data and it is independent from the programming language. In ros we use IDL to define the types of data that we use in .srv and .msg files. Rosidl defines the message IDL syntax for .srv and .msg for parsing the files .ros using rosidl to pars the .msg and .srv files and use the data types defined in those files.