Concept of Mining

Mining of ethereum transactions:

1. A user sends a transaction request which is sent to the entire ethereum network.
2. Each node in the network adds these transactions into a memory pool.
3. Memory pool consists of those valid transactions which are not yet assigned to a block.
4. A mining node then combines several of these transactions into a block such that
   -> Transaction fee is maximum
   -> Total gas in the block does not exceed the gas limit.
5. Miner then validates each of those transactions and executes the code of the request.
6. A "proof of work" certificate is produced by the miner once all the transactions in a block are verified and executed.
7. Miner then broadcasts the block to all the nodes in the network.
8. Each node verifies the checksum of their new EVM state and compares it with the state of the block claimed by the miner.
9. Once verified, all nodes add this block to the tail of the blockchain.

Note: All the nodes remove the transactions of the added block from their memory pool

References:

- https://ethereum.org/en/developers/docs/consensus-mechanisms/pow/mining/
- https://blog.goodaudience.com/how-a-miner-adds-transactions-to-the-blockchain-in-seven-steps-856053271476