



2.7.1.2 KEY FEATURES OF AN ALGORITHM

- HERE IS AN EXAMPLE OF AN ALGORITHM, FOR MAKING A POT OF TEA.
- 1. IF THE KETTLE DOES NOT CONTAIN WATER, THEN FILL THE KETTLE.
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- 2. PLUG THE KETTLE INTO THE POWER POINT AND SWITCH IT ON.
- 3. IF THE TEAPOT IS NOT EMPTY, THEN EMPTY THE TEAPOT.
- 4. PLACE TEA LEAVES IN THE TEAPOT.
- 5. IF THE WATER IS NOT BOILING, THEN GOTO STEP.5.
- 6. SWITCH OFF THE KETTLE. 7. POUR WATER FROM THE KETTLE INTO THE TEAPOT.

- IT CAN BE SEEN THAT THE ALGORITHM HAS A NUMBER OF STEPS AND THAT SOME STEPS (STEP 1, 3 AND 5) INVOLVE DECISION MAKING AND ONE STEP (STEP 5 IN THIS CASE) INVOLVES REPETITION, IN THIS CASE THE PROCESS OF WAITING FOR THE KETTLE TO BOIL.
- FROM THE ABOVE EXAMPLE, IT IS CLEAR THAT ALGORITHM SHOWS THREE FEATURES.
 - SEQUENCE (ALSO KNOWN AS PROCESS).
 - DECISION (ALSO KNOWN AS SELECTION).
 - REPETITION (ALSO KNOWN AS ITERATION OR LOOPING).
- THEREFORE, AN ALGORITHM CAN BE STATED USING SEQUENCE, DECISION AND REPETITION.

- SEQUENCE
- SEQUENCE MEANS THAT EACH STEP OR PROCESS IN THE ALGORITHM IS EXECUTED IN THE SPECIFIED ORDER. IN THE ABOVE EXAMPLE, EAC PROCESS MUST BE IN THE PROPER PLACE OTHERWISE THE ALGORITHM WILL FAIL.
- 2. DECISION
- IN ALGORITHMS THE RESULT OF THE DECISION IS EITHER TRUE OR FALSE; THERE IS NO STATE IN BETWEEN. THE OUTCOME OF THE DECISION IS BASED ON SOME CONDITION THAT CAN RESULT IN TRUE OR FALSE VALUE. FOR EXAMPLE
- IF TODAY IS SUNDAY THEN IT IS HOLIDAY
- IS A DECISION AND THE DECISION TAKES THE GENERAL FORM:

IF PROPOSITION THEN PROCESS

- A PROPOSITION, IN THIS SENSE, IS A STATEMENT WHICH CAN ONLY BE TRUE OR FALSE VALUE.
- IT IS EITHER TRUE 'TODAY IS SUNDAY' OR IT IS FALSE 'TODAY IS NOT SUNDAY'.
- IT CAN NOT BE BOTH TRUE AND FALSE.
- EXECUTED. THE DECISION CAN ALSO BE STATED AS IF PROPOSITION
- THEN PROCESS 1
- ELSE PROCESS 2

- THIS IS THE IF... THEN... ELSE FORM OF DECISION. THIS MEANS THAT IF THE PROPOSITION IS TRUE THEN EXECUTE PROCESS1 ELSE OR OTHERWISE PROCESS2.
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- THE FIRST FORM OF THE DECISION IF PROPOSITION THEN PROCESS HAS A NULL ELSE, THAT IS, THERE IS NO ELSE.