

3.6 language is recognizable if some enumerator enumerates it. simpler algorithm for the forward direction of the proof of theorem is S_1, S_2, \dots a list of all strings. if TM M recognizes a language L , then we can construct following enumerator E for L .

1) repeat the following for $i = 1, 2, 3, \dots$

2) Run m on S

3) if it accepts, prints out S .

there are some defects which we need to consider.

if M loops on a creating S runs forever, E could not check any input after S . if it occurs then E might fail to enumerate its language L as required.

3.15D for a Turing decidable language L . machine decides language m then the complement is M on input w . the description of M is as follows.

$M =$ on input w .

1) Accepts if M rejects.

2) Else accepts.

3.15D the intersection to these languages is denoted by L_{XY} and the Turing machine recognizing the language is M_{XY} .

for the input string s from L_{XY} , M_{XY} works as shown below.

Turning machine M_x runs on s . if it accepts s then M_Y runs on s .

suppose M_y accepts s then it is accepted by the turning machine.

1)