Homework15

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Problem1

Lu={(M, w)|M accepts w} is RE

If there is a decider Du for Lu

Then input M , w to Du will yield accept or reject;

So there is a decider D1 based on Du that yields reject or accept if Du yields accpet or reject;

And there is a decider D' based on D1 that takes w as input and yields the result of D1;

Take D' as the input of D1,if D'accepts w then D1 accepts w which means D'rejects w;

So Lu is undecidable.

Problem2

Lhalt={(M, w)|M halts on w} is RE

If there is a decider Dh for Lu

Then input M , w to Dh will yield accept or reject if M halts on w or M loops on w;

So there is a decider D1 based on Dh that yields halt or loop if Dh yields reject or accept;

And there is a decider D' based on D1 that takes w as input and yields the result of D1;

Take D' as the input of D1,if D'halts on w then D1 halts on w which means D' loops on w;

So Lhalt is undecidable.