MRSPACE = UNSPACE(Nd) Q: Which is correct? A) SPACE (S(n)) = DTIME(S(n)) = NSPACE(S(n)) B) SPACE (S(n)) C DTIME (S(n)) C SPACE (2 C) DTIME (S(n)) $\subseteq SPACE(S(n))\subseteq NTIME(S(n))$ DIME(S(n)) $\subseteq SPACE(S(n)) \subseteq DTME(2^{O(S(n))})$ DTME(S(n)) SPACE(S(n)) SPACE(S(N)) CNSPACE(S(N)) ? -> (3) NSPACE (S(N)) C DTIME (20(S(N))) DLEDTIME (S(n)) -> M Mat decides Lin O(s(n)) time steps -> Can write at-most O(s(n)) bits to R/W tape > L & SPACE (S(n)) 2) LESPACE (S(N) > M decides Lin O(S(N)) space. -> Let M' be the NTM that does the same thing as M. regardless of its nondeterministic Choices JE MSPACE (S(N)) 3) LENSPACE (S(n)) # of possible R/W strings: N 60) [6] - 3× · · · 0101 - · × 4 ·) 0101010 X O(S(N)) (R/W head positions) x O(N) (mont head positions) D. X ... Jet: PSPACE = det: Quantified Boolean Formula $\exists u_3 \forall u_1 \exists u_2 \left(u_1 \wedge u_2\right) \vee \left(\neg u_1 \wedge \neg u_2\right) \rightarrow \left(u_3 \wedge u_1\right)$ Game: I choose I values, you choose & values

Me You Me Us Us

6s. Space

Wednesday, March 9, 2022 3:48 PM

def: SPACE, NSPACE:

LG (N)SPACE(S(N)) if I a (N)TM M that

decides L and uses O(s(n)) bits of R/W

tape on all inputs of lougth n.