0/5 Questions Answered

Week 6 Monday Review Quiz

STUDENT NAME

Search students by name or email…

Q1 Turing machine vocabulary

2 Points

Which of the following sentences make sense? (Some are true and some are false -- select all and only those that "type check" correctly, regardless of whether they are true or false).

- [ ] A language is a decider if it always halts.
- [ ] The union of two deciders is a decider.
- [ ] A language is decidable if and only if it is recognizable.
- [ ] There is a Turing machine that isn't decidable.
- [ ] There is a recognizable language that isn't decided by any Turing machine.

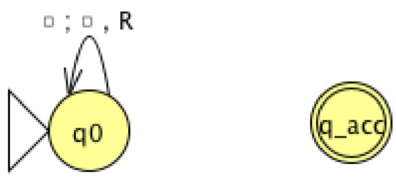
Save Answer

Q2 Implementation level definition of TM

3 Points

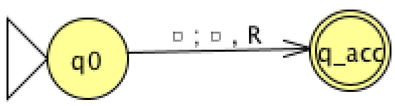
Consider the following state diagrams of four Turing machines over the input alphabet $\{0, 1\}$. (We use the convention that q_{rej} may sometimes be omitted from the diagram and that all missing transitions are directed to it.)

M_1

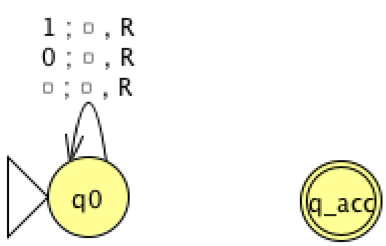


M_2

M_3



M_4



Q2.1 (a)

1 Point

The implementation level definition below agrees with which of the machines whose state diagrams are above?

"On input w:

1. If w is the empty string, accept.
2. Otherwise, reject."

- M_1
- M_2
- M_3
- M_4
- None of the above.

Save Answer

Q2.2 (b)

1 Point

The implementation level definition below agrees with which of the machines whose state diagrams are above?

"On input w:

1. If w is the empty string, accept.
2. Otherwise, sweep through the tape from left to right, erasing all input characters, until you reach the end of w, and accept."

- M_1
- M_2
- M_3
- M_4
- None of the above.

Save Answer

Q2.3 (c)

1 Point

The implementation level definition below agrees with which of the machines whose state diagrams are above?

"On input w:

1. Sweep through the tape from left to right, looking for first nonblank symbol.

2. When current cell has a 0 or 1, reject."

- M_1
- M_2
- M_3
- M_4
- None of the above.

Save Answer

Q3 Feedback

0 Points

Any feedback about this week's material or comments you'd like to share? (Optional; not for credit)

Enter your answer here

Save Answer

Save All Answers

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0/5 Questions Answered

Week 6 Wednesday Review Quiz

STUDENT NAME

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Q1 Looping for Turing machines

1 Point

True or False: If the input to a TM is finite, then at some point, the TM has to be able to finish reading it. Therefore, infinite looping can only happen when the input takes up the whole TM tape (which is infinitely long).

- True
- False

Save Answer

Q2 Variants of Turing machines

1 Point

Select all and only true statements below.

- [ ] A set of strings is Turing-recognizable if and only if it is the language of some multi-tape machine.
- [ ] There is a language that is recognized by a multitape Turing machine but not by any (1-tape deterministic) Turing machine.
- [ ] There is a language that is recognized by a nondeterministic Turing machine but not by any (1-tape deterministic) Turing machine.

Save Answer

Q3 Equally expressive models of computation

1 Point

True or False: as part of a proof that a model of computation is equally expressive to (1-tape deterministic) Turing machines, we can add special symbols to the tape alphabet of the Turing machine being constructed to help it simulate the other model.

- ○ True
- ○ False

Save Answer

Q4 Classifying languages

2 Points

Select all and only the true statements below.

- [ ] A language is Turing-recognizable if and only it is not regular.
- [ ] If a language is not context-free then it is Turing-decidable.
- [ ] Every regular language is Turing-recognizable.
- [ ] All context-free languages are Turing-decidable.

Save Answer

Q5 Feedback

0 Points

Any feedback about this week's material or comments you'd like to share? (Optional; not for credit)

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1/7 Questions Answered
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Week 6 Friday Review Quiz

STUDENT NAME

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Q1 Implementation level definition of TMs

1 Point

What is allowed when giving an implementation-level description of a Turing machine? (Select all and only that apply)

- [ ] Give the seven-tuple defining a Turing machine
- [ ] Build new machines from existing machines using previously shown results (e.g. "Construct an NFA B such that $L(B) = L(A)^R$")
- [ ] Mention the tape or its contents (e.g. "Scan the tape from left to right until a blank is seen.")
- [ ] Use other Turing machines as subroutines (e.g. "Run N on w")
- [ ] Mention the tape head (e.g. "Return the tape head to the left end of the tape.")
- [ ] Mention the states of the machine (e.g. "Swap the accept and reject states.")
- [ ] Use previously shown conversions and constructions (e.g. "Convert regular expression R to an NFA N")

Save Answer

Q2 High level description of TMs

1 Point

What is allowed when giving a high-level description of a Turing machine? (Select all and only that apply)

- [ ] Give the seven-tuple defining a Turing machine
- [ ] Build new machines from existing machines using previously shown results (e.g. "Construct an NFA B such that $L(B) = L(A)^R$")
- [ ] Mention the tape or its contents (e.g. "Scan the tape from left to right until a blank is seen.")
- [ ] Use other Turing machines as subroutines (e.g. "Run N on w")
- [ ] Mention the tape head (e.g. "Return the tape head to the left end of the tape.")
- [ ] Mention the states of the machine (e.g. "Swap the accept and reject states.")
- [ ] Use previously shown conversions and constructions (e.g. "Convert regular expression R to an NFA N")

Save Answer

Q3 High level descriptions of Turing machines

4 Points

Suppose M_1 and M_2 are Turing machines. Consider the Turing machines given by the high-level descriptions:

"M = On input w,
1. Run M_1 on input w. If M_1 accepts w, accept. If M_1 rejects w, go to 2.
2. Run M_2 on input w. If M_2 accepts w, accept. If M_2 rejects w, reject."

"M' = On input w,
1. Run M_1 on input w. If M_1 rejects w, reject. If M_1 accepts w, go to 2.
2. Run M_2 on input w. If M_2 rejects w, reject. If M_2 accepts w, accept."

For each of the following claims, answer Always true if the statement is true for all possible M_1 and M_2; answer Always false if the statement is false for all possible M_1 and M_2; and answer Neither otherwise.

Q3.1 (a)

1 Point

If $w \in L(M_1)$ then $w \in L(M)$.

- (●) Always true
- ( ) Always false
- ( ) Neither

If $w \in L(M_2)$ then $w \in L(M)$.

- ( ) Always true
- ( ) Always false
- (●) Neither

✔ Correct

Save Answer Last saved on **May 15 at 10:36 PM**

Q3.2 (b)

1 Point

If $w \notin L(M_1)$ then $w \notin L(M)$.

- Always true
- Always false
- Neither

If $w \notin L(M_2)$ then $w \notin L(M)$.

- Always true
- Always false
- Neither

Save Answer

Q3.3 (c)

1 Point

If $w \in L(M_1)$ then $w \in L(M')$.

- Always true
- Always false
- Neither

If $w \in L(M_2)$ then $w \in L(M')$.

- Always true
- Always false
- Neither

Save Answer

Q3.4 (d)

1 Point

If $w \notin L(M_1)$ then $w \notin L(M')$.

- Always true
- Always false
- Neither

If $w \notin L(M_2)$ then $w \notin L(M')$.

- Always true
- Always false
- Neither

Save Answer

Q4 Feedback

0 Points

Any feedback about this week's material or comments you'd like to share? (Optional; not for credit)

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0/4 Questions Answered

Week 7 Monday Review Quiz

STUDENT NAME

Search students by name or email…

Q1 Computational problems

1 Point

Select all and only true statements below.

- [ ] The Church-Turing theses says that the intuitive notion of algorithms exactly equals Turing machine algorithms.
- [ ] A computational problem is a question that is asked about strings or machines or algorithms.
- [ ] To describe low-level programming of Turing machines, we use formal definitions (and, potentially state diagrams)
- [ ] To describe memory management and implementing data access with data structures, we use implementation-level description.
- [ ] The input to a Turing machine is always a string.
- [ ] The format of the input to a Turing machine can be checked to interpret this string as representing structured data (like the formal definition of a DFA, another Turing machine, etc.)

Save Answer

Q2 Computational problems about DFA

4 Points

We define the following computational problems about DFAs over a fixed alphabet Σ.

$$A_{DFA} = \{\langle M, w\rangle \mid M \text{ is a DFA over } \Sigma \text{ and } w \in \Sigma^* \text{ and } w \in L(M)\}$$
$$E_{DFA} = \{\langle M\rangle \mid M \text{ is a DFA over } \Sigma \text{ and } L(M) = \emptyset\}$$
$$ALL_{DFA} = \{\langle M\rangle \mid M \text{ is a DFA over } \Sigma \text{ and } L(M) = \Sigma^*\}$$
$$INF_{DFA} = \{\langle M\rangle \mid M \text{ is a DFA over } \Sigma \text{ and } L(M) \text{ is infinite}\}$$

Q2.1 (a)

2 Points

Select all and only the true statements below.

- [ ] $A_{DFA} \subseteq E_{DFA}$
- [ ] $E_{DFA} \subseteq A_{DFA}$
- [ ] $E_{DFA} \subseteq ALL_{DFA}$
- [ ] $ALL_{DFA} \subseteq E_{DFA}$
- [ ] $INF_{DFA} \subseteq ALL_{DFA}$
- [ ] $ALL_{DFA} \subseteq INF_{DFA}$

Save Answer

Q2.2 (b)

2 Points

Select all and only the true statements below.

- [ ] $A_{DFA} \cap E_{DFA} = \emptyset$
- [ ] $E_{DFA} \cap ALL_{DFA} = \emptyset$
- [ ] $E_{DFA} \cap INF_{DFA} = \emptyset$
- [ ] $ALL_{DFA} \cap INFDFA = \emptyset$

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Q3 Feedback

0 Points

Any questions or comments about this week's material? (Optional; not for credit)

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Week 7 Wednesday Review Quiz

STUDENT NAME

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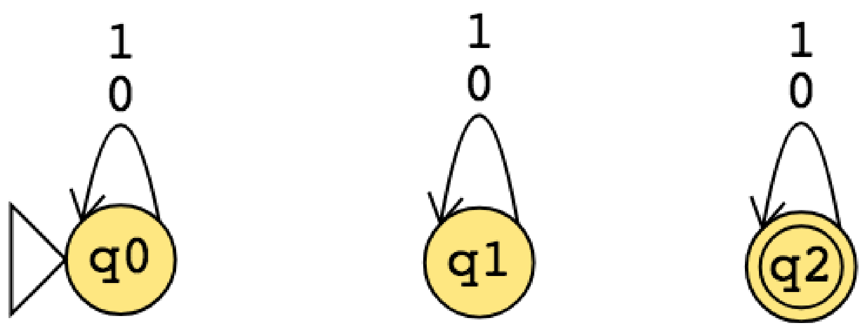
Q1 Example strings

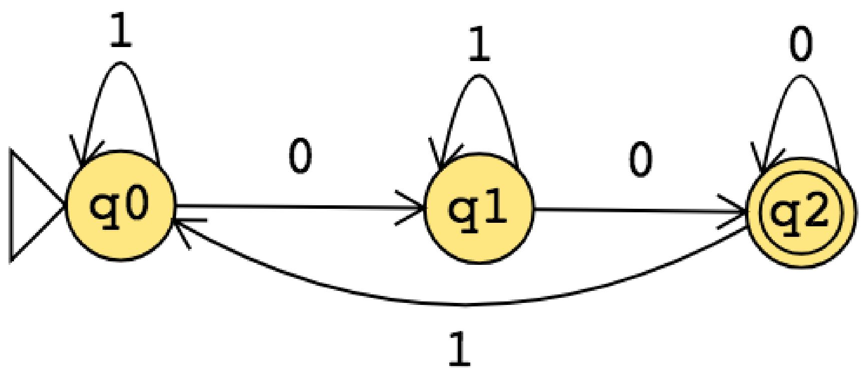
3 Points

Consider the following three DFA over the alphabet $\{0, 1\}$, whose state diagrams are below.

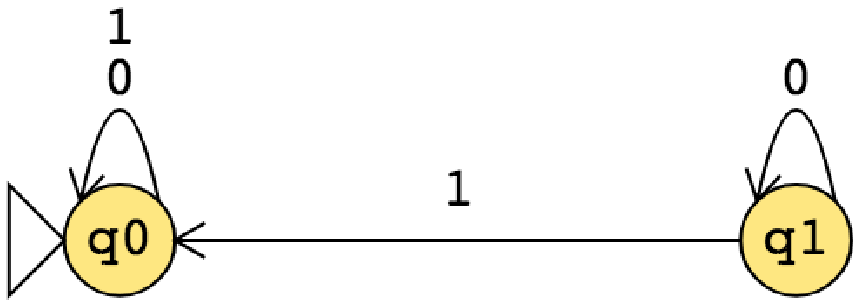
A1



A2



A3



Select all and only true statements below.

- [ ] $\langle A1\rangle \in A_{DFA}$
- [ ] $\langle A1\rangle \in E_{DFA}$
- [ ] $\langle A1\rangle \in EQ_{DFA}$
- [ ] $\langle A2, 0\rangle \in A_{DFA}$
- [ ] $\langle A2, 00\rangle \in E_{DFA}$
- [ ] $\langle A2, 00\rangle \in EQ_{DFA}$
- [ ] $\langle A3, A1\rangle \in A_{DFA}$
- [ ] $\langle A3, A2\rangle \in E_{DFA}$
- [ ] $\langle A3, A3\rangle \in EQ_{DFA}$

Save Answer

Q2 Acceptance problems

1 Point

Select all and only the acceptance problems below that are decidable.

- [ ] The acceptance problem for DFA, A_{DFA}
- [ ] The acceptance problem for NFA, A_{NFA}
- [ ] The acceptance problem for regular expressions, A_{REX}
- [ ] The acceptance problem for PDA, A_{PDA}
- [ ] The acceptance problem for CFG, A_{CFG}

Save Answer

Q3 Emptiness problems

1 Point

Select all and only the emptinnes problems below that are decidable.

- [ ] The emptiness problem for DFA, E_{DFA}
- [ ] The emptiness problem for NFA, E_{NFA}
- [ ] The emptiness problem for regular expressions, E_{REX}
- [ ] The emptiness problem for PDA, E_{PDA}
- [ ] The emptiness problem for CFG, E_{CFG}

Save Answer

Q4 Feedback

0 Points

Any feedback about this week's material or comments you'd like to share? (Optional; not for credit)

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0/5 Questions Answered

Week 7 Friday Review Quiz

STUDENT NAME

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Q1 Languages

1 Point

Which of the following are languages? (Select all that apply)

- [ ] $\{ \ L \mid L \text{ is a language and } L \text{ is decidable } \}$
- [ ] $\{ \ M \mid M \text{ is a Turing machine and } L(M) \text{ is infinite } \}$
- [ ] $\{\langle M\rangle \mid \ M \text{ is a Turing machine and } L(M) \text{ is finite } \}$
- [ ] $\{\langle M, w\rangle \mid M \text{ is a Turing machine and } w \text{ is a string and } w \text{ is in } L(M$
- [ ] $\{ \ w \mid w \text{ is accepted by } M_0\}$ (Assume that M_0 is some fixed Turing machine

Save Answer

Q2 Turing machines

1 Point

How many Turing machines are there?

- Finitely many, because each Turing machine is defined by 7 parameters $(Q, \Sigma, \Gamma, \delta, q_0, q_{acc}, q_{rej})$
- Countably infinitely many, because each Turing machine M is encoded by some string $\langle M \rangle$ and there are only countably many strings.
- Uncountably infinitely many, because there are uncountably many sets of strings and each TM recognizes some set of strings.

Save Answer

Q3 Type-checking input in TMs

1 Point

Consider the Turing machine X, defined as follows:

"On input $\langle M, w \rangle$ where M is a Turing machine and w is a string: ...." (where the ... are filled in with the steps of the algorithm).

What happens if we run X on input string x, where x is not of the form $\langle M, w \rangle$ for any Turing machine M or string w?

- The computation of X on x gets stuck and does not proceed to step 1.
- The computation of X on x implicitly type checks x and rejects.
- The computation of X on x defaults to accept the string when it's not of the declared type.
- The computation of X on x runs all possible computations of X on input $\langle M, w \rangle$ for any TM M.

Save Answer

Q4 A_{TM}

1 Point

Consider the Turing machine over $\{0, 1\}$ defined by the high-level description:

M = "On input w: 1. If w is nonempty, accept. 2. Otherwise, let i=1, while (i>0), increment i by 1."

Select all and only the true statements below.

- [ ] $\langle M, \varepsilon \rangle$ is a string.
- [ ] $\langle M, 0 \rangle$ is a string.
- [ ] $\langle M, \varepsilon \rangle \in A_{TM}$
- [ ] $\langle M, 0 \rangle \in A_{TM}$

Save Answer

Q5 Feedback

0 Points

Any feedback about today's material or comments you'd like to share? (Optional; not for credit)

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0/4 Questions Answered

Week 8 Monday Review Quiz

STUDENT NAME

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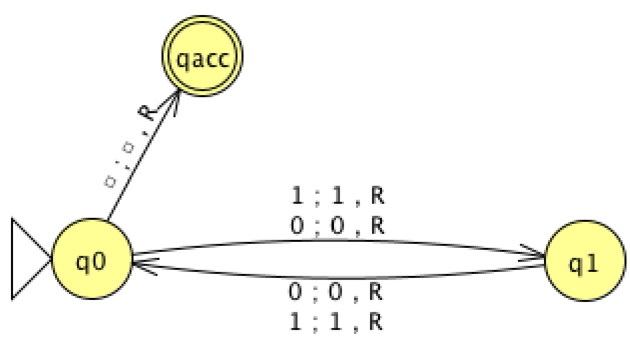
Q1 ATM: examples

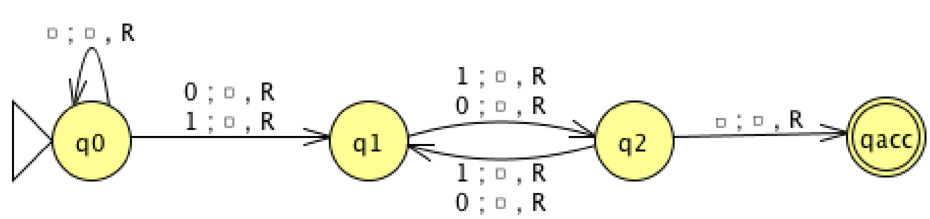
2 Points

Consider the following Turing machines over the alphabet $\{0, 1\}$, whose state diagrams are below.

M1



M2



Select all and only true statements below.

- [ ] $\langle M1 \rangle \in A_{TM}$
- [ ] $\langle M1 \rangle \in \overline{A_{TM}}$
- [ ] $\langle M2, \varepsilon \rangle \in A_{TM}$
- [ ] $\langle M2, 0 \rangle \in A_{TM}$
- [ ] $\langle M2, 00 \rangle \in A_{TM}$

Save Answer

Q2 ATM: "difficulty"

2 Points

Select all and only true statements below.

- [ ] A_{TM} is regular
- [ ] A_{TM} is context-free
- [ ] A_{TM} is Turing-decidable
- [ ] A_{TM} is Turing-recognizable
- [ ] A_{TM} is nonregular
- [ ] A_{TM} is non-context-free
- [ ] A_{TM} is undecidable
- [ ] A_{TM} is unrecognizable

Save Answer

Q3 Closure
1 Point

Select all and only true statements below.

- [ ] The class of regular languages is closed under complementation
- [ ] The class of context-free languages is closed under complementation
- [ ] The class of decidable languages is closed under complementation
- [ ] The class of recognizable languages is closed under complementation
- [ ] The class of undecidable languages is closed under complementation
- [ ] The class of unrecognizable languages is closed under complementation

Save Answer

Q4 Feedback
0 Points

Any feedback about this week's material or comments you'd like to share? (Optional; not for credit)

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0/4 Questions Answered

Week 8 Wednesday Review Quiz

STUDENT NAME

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Q1 Computable functions

2 Points

Recall that a function $f : \Sigma^* \to \Sigma^*$ is computable means that there is some Turing machine M such that, on every input w, halts with just $f(w)$ on its tape.

Q1.1 (a)

1 Point

Select all and only the functions below that are computable.

- [ ] The function $f_1 : \{0,1\}^* \to \{0,1\}^*$ such that $f_1(\varepsilon) = 001$ and $f_1(x) = \varepsilon$ for all $x \neq \varepsilon$.
- [ ] The function $f_2 : \{0,1\}^* \to \{0,1\}^*$ such that $f_2(x) = 0x0$ (i.e. the concatenation of 0 with x followed by a 0).

Save Answer

Q1.2 (b)

1 Point

True or False: The function

$$f_3(x) = \begin{cases} 0 & if\ some - classes - meet - outside - in - Fall \\ 1 & otherwise \end{cases}$$

is a computable function with domain Σ^* and codomain Σ^*

- False, because the function f_3 is not well-defined.
- False, because the function f_3 cannot be computed by any Turing machine.
- True, because the function f_3 is a constant function (even though we may not know right now which constant value it outputs)

Save Answer

Q2 Mapping reduction

4 Points

Recall that mapping reduction is defined in section 5.3: The problem A mapping reduces to B means there is a computable function $f : \Sigma^* \to \Sigma^*$ such that for all $x \in \Sigma^*$, $x \in A$ iff $f(x) \in B$.
A computable function that makes the iff true is said to witness the mapping reduction from A to B.

Fix $\Sigma = \{0, 1\}$ throughout this question.

Select all and only the true statements below.

- [ ] $\emptyset \leq_m \emptyset$ is witnessed by the computable function $id : \Sigma^* \to \Sigma^*$ given by $id(x) = x$ for all x.
- [ ] $\Sigma^* \leq_m \Sigma^*$ is witnessed by the computable function $id : \Sigma^* \to \Sigma^*$ given by $id(x) = x$ for all x.
- [ ] $\Sigma^* \leq_m \emptyset$ is witnessed by the computable function $id : \Sigma^* \to \Sigma^*$ given by $id(x) = x$ for all x.
- [ ] $\{0,1\} \leq_m \{00,10\}$ is witnessed by the computable function $id : \Sigma^* \to \Sigma^*$ given by $id(x) = x$ for all x.
- [ ] $\{0,1\} \leq_m \{00,10\}$ is witnessed by the computable function $g : \Sigma^* \to \Sigma^*$ given by $g(x) = x0$ for all x.
- [ ] $\{00,10\} \leq_m \{0,1\}$ is witnessed by the computable function $g : \Sigma^* \to \Sigma^*$ given by $g(x) = x0$ for all x.
- [ ] $\{00,10\} \leq_m \{0,1\}$ is witnessed by the computable function $h : \Sigma^* \to \Sigma^*$ given by $h(x) = \begin{cases} x & if x = \varepsilon \\ leftmost\ character\ of\ x & otherwise \end{cases}$

Save Answer

Q3 Feedback

0 Points

Any feedback about this week's material or comments you'd like to share? (Optional; not for credit)

Enter your answer here

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0/5 Questions Answered

Week 8 Friday Review Quiz

STUDENT NAME

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Q1 Mapping reduction identities

2 Points

Fix $\Sigma = \{0, 1\}$ for this question.

Q1.1 (a)

1 Point

Select all and only the true statements.

- [ ] For languages A, B if A mapping reduces to B and B mapping reduces to A then $A = B$.
- [ ] For languages A, B, C if A mapping reduces to B and B mapping reduces to C then A mapping reduces to C.
- [ ] For languages A, B if A mapping reduces to B then B mapping reduces to A.

Save Answer

Q1.2 (b)

1 Point

Select all and only the true statements.

- [ ] Every language mapping reduces to its complement.
- [ ] Every decidable language mapping reduces to $\emptyset$.
- [ ] Σ^* mapping reduces to every nonempty language over Σ.

Save Answer

Q2 Computable functions for mapping reductions

2 Points

Fix $\Sigma = \{0, 1\}$ and define $const_{out} \in \Sigma^*$ to be a string constant that is not the code of any pair of the form $\langle M, w \rangle$, where M is a Turing machine and w is a string.

Consider the computable function defined by the high-level description of the TM computing it:

$F =$ "On input x:
1. If $x \neq \langle M, w \rangle$ for any Turing machine M and string w, output $const_{out}$.
2. Otherwise, let M be the Turing machine and w the string such that $x = \langle M, w \rangle$.
3. Define the Turing machine M' as :
  "On input y,
   1. Run M on y^R. If it accepts, accept. If it rejects, reject."
4. Output $\langle M', w^R \rangle$."

Q2.1 (a)

1 Point

True or False: For all strings x, if $x \in A_{TM}$ then $F(x) \in HALT_{TM}$

- ○ True
- ○ False

True or False: For all strings x, if $F(x) \in HALT_{TM}$ then $x \in A_{TM}$

- True
- False

Save Answer

Q2.2 (b)

1 Point

True or False: For all strings x, if $x \in HALT_{TM}$ then $F(x) \in A_{TM}$

- True
- False

True or False: For all strings x, if $F(x) \in A_{TM}$ then $x \in HALT_{TM}$

- True
- False

Save Answer

Q3 Feedback

0 Points

Any feedback about this week's material or comments you'd like to share? (Optional; not for credit)

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Save Answer

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0/4 Questions Answered

Week 9 Monday Review Quiz

STUDENT NAME

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Q1 Mapping reductions

1 Point

True or false: If A mapping reduces to B and B mapping reduces to A then A=B.

- True
- False

Save Answer

Q2 Mapping reductions

2 Points

Select all and only true statements.

- [ ] For all sets A, $A \leq_m A$
- [ ] For all sets A and B, if $A \leq_m B$ then $B \leq_m A$
- [ ] For all unequal sets A and B, if $A \leq_m B$ then it is not the case that $B \leq_m A$
- [ ] There are distinct sets A and B where $A \leq_m B$ and $B \leq_m A$

Save Answer

Q3 Mapping reducibility

2 Points

Fix the alphabet to be $\{0, 1\}$. Which languages over this alphabet mapping reduce to the set $\{0, 1, 00, 11\}$? (Select all that apply)

- [ ] The empty set.
- [ ] The set of all strings.
- [ ] Any decidable language L that is nonempty and not the set of all strings
- [ ] A_{TM}

Save Answer

Q4 Feedback

0 Points

Any feedback about this week's material or comments you'd like to share? (Optional; not for credit)

Enter your answer here

Save Answer

Save All Answers

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0/4 Questions Answered

Week 9 Wednesday Review Quiz

STUDENT NAME

Search students by name or email...

Q1 Decidable Languages

2 Points

Which of the following languages are decidable? (Select all that apply)

- [ ] $4st_{TM} = \{<M> \mid M \text{ is a TM and } M \text{ has exactly 4 states}\}$
- [ ] $REC_{TM} = \{<M> \mid M \text{ is a TM and } L(M) \text{ is recognizable}\}$
- [ ] $DEC_{TM} = \{<M> \mid M \text{ is a TM and } M \text{ is a decider}\}$
- [ ] $E_{TM} = \{<M> \mid M \text{ is a TM over } \Sigma \text{ and } L(M) \text{ is empty }\}$
- [ ] $NonE_{TM} = \{<M> \mid M \text{ is a TM over } \Sigma \text{ and } L(M) \text{ is nonempty }\}$
- [ ] $EQ_{TM} = \{<M_1, M_2> \mid M_1, M_2 \text{ are TMs and } L(M_1) = L(M_2)\}$

Save Answer

Q2 Recognizable Languages

2 Points

Which of the following languages are recognizable? (Select all that apply)

- [ ] $4st_{TM} = \{<M> \mid M \text{ is a TM and } M \text{ has exactly 4 states}\}$
- [ ] $REC_{TM} = \{<M> \mid M \text{ is a TM and } L(M) \text{ is recognizable}\}$
- [ ] $DEC_{TM} = \{<M> \mid M \text{ is a TM and } M \text{ is a decider}\}$
- [ ] $E_{TM} = \{<M> \mid M \text{ is a TM over } \Sigma \text{ and } L(M) \text{ is empty }\}$
- [ ] $NonE_{TM} = \{<M> \mid M \text{ is a TM over } \Sigma \text{ and } L(M) \text{ is nonempty }\}$
- [ ] $EQ_{TM} = \{<M_1, M_2> \mid M_1, M_2 \text{ are TMs and } L(M_1) = L(M_2)\}$

Save Answer

Q3 Mapping reductions

1 Point

What can you conclude from knowing that A_TM mapping reduces to a language L? (Select all that apply)

- [ ] L is decidable
- [ ] L is undecidable
- [ ] L is empty
- [ ] L is infinite
- [ ] L is recognizable
- [ ] L is unrecognizable

Save Answer

Q4 Feedback

0 Points

Any questions or feedback about this week's material? (Optional; not for credit)

Enter your answer here

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0/4 Questions Answered

Week 9 Friday Review Quiz

STUDENT NAME

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Q1 Languages in P

2 Points

Which of the following languages are in P? (Select all that apply)

- [ ] $ALL_{DFA} = \{<A> \mid A \text{ is a DFA over } \Sigma \text{ and } L(A) = \Sigma^*\}$
- [ ] $E_{DFA} = \{<A> \mid A \text{ is a DFA and } L(A) \text{ is empty }\}$
- [ ] $EQ_{DFA} = \{<A, B> \mid A, B \text{ are DFAs and } L(A) = L(B)\}$
- [ ] $E_{TM} = \{<M> \mid M \text{ is a TM over } \Sigma \text{ and } L(M) \text{ is empty }\}$
- [ ] $EQ_{TM} = \{<M_1, M_2> \mid M_1, M_2 \text{ are TMs and } L(M_1) = L(M_2)\}$

Save Answer

Q2 Time complexity

3 Points

Q2.1 (a)

2 Points

Select all and only the classes below that equal one another.

- [ ] $\mathrm{TIME}(100)$
- [ ] $\mathrm{TIME}(100n)$
- [ ] $\mathrm{TIME}(n)$
- [ ] $\mathrm{TIME}(n-3)$
- [ ] $\mathrm{TIME}(n^3+1)$

Save Answer

Q2.2 (b)

1 Point

Which of the following is a subset of all others in the list?

- $\mathrm{TIME}(n^2)$
- $\mathrm{NTIME}(n^2)$
- $\mathrm{TIME}(n)$
- $\mathrm{NTIME}(n^3)$

Save Answer

Q3 Feedback

0 Points

Any feedback about this week's material or comments you'd like to share? (Optional; not for credit)

Enter your answer here

Save Answer