

Labels of conditional transitions are of the form $g : \alpha$ where g is a boolean condition called

_____.

Choices:

global



gesture



gun



guard



BLACK VIGO PROUDLY PRESENTS
CS636 - Formal Methods Mid Term
Verify the answers Please.

Labels of conditional transitions are of the form $g : \alpha$ where α is an _____.

Choices:

☐ action

☐ application

☐ analysis

☒ argument

The nodes of a program graph are called _____.

Choices:

☒ edges

☐ notations

☐ locations

☐ elements

Labels of conditional transitions are of the form $g : \alpha$ where α is an _____.

Choices:

☐ action

☐ application

☐ analysis

☒ argument

If Non-Deterministic Finite Automata (NFA) of 6 states excluding the initial state is converted into DFA, then maximum possible number of states for the DFA are _____.

Choices:

76



64



32



128



Transition System (TS) is called finite if _____.

Choices:

S, Act, and AP are finite



labeling function is finite



S, I, and L are finite



only S is finite



Answer:



A Deterministic Finite Automata (DFA) is a 5-tuple, (S, Σ, T, s, A) . Explain these (S, Σ, T, s, A) terms.

Answer:



For example α denotes the action $x := y+1$, where x and y are integer variables, and η is the evaluation with $\eta(x) = 17$ and $\eta(y) = -2$, then what will be the value of $Effect(\alpha, \eta)(x)$ and $Effect(\alpha, \eta)(y)$?

Answer:

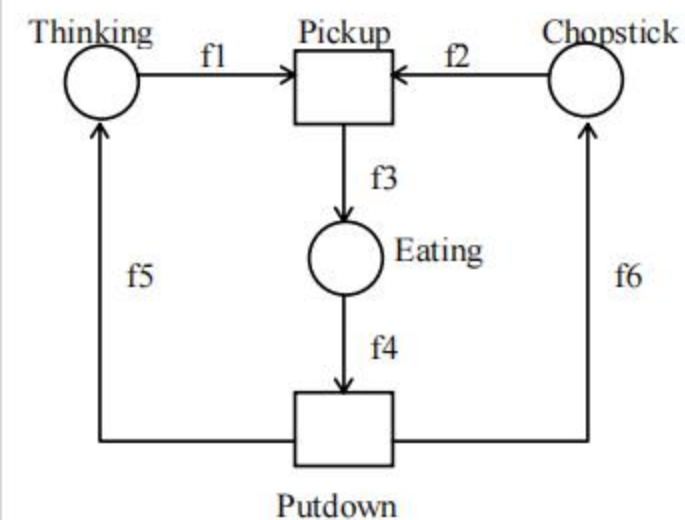


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Answer:



The following is an example of the PrT net model of the Dining Philosophers problem.



List down the places and transitions from the following model.

Answer:



What is primitive proposition? Explain with example.

Answer:



In order to apply model checking to a design, different phases are involved. Mention the names of those phases.

Answer:



How many tokens are required at each input place to fire a transition?

Answer:



Only one token is required to fire a transition as an input.

What is primitive proposition? Explain with example.

Answer:



The truth value of ' $4+3=7$ or 5 is not prime'.

Choices:

- ☐ Whole compound statement is true.
- ☒ Only first part of the statement is true.
- ☐ Only second part of the statement is true.
- ☐ This compound statement is false.

Which of the following statement is a proposition?

Choices:

What is the time now?



Read lesson carefully.



The only odd prime number is 2.



God bless you.



Let P: I am in restaurant.; Q: I love food.; then $q \rightarrow p$ (q implies p) is?

Choices:

☒ If I love food, then I am in restaurant.

☐ I love food.

☐ If I am in restaurant, then I love food.

☐ I am not in restaurant.

One or more propositions can be combined to form a single _____ proposition using connectives.

Choices:

☒ Compound☐ Conditional☐ Distributed☐ Positive

A statement is not a(n) _____, if we cannot decide whether it is true or false.

Choices:

☐ question☒ proposition☐ example☐ command

System _____ is impossible to achieve without the use of the right modeling approach.

Choices:

development



deployment



maintenance



verification



Any verification using model-based techniques is only as good as the _____ of the system.

Choices:☐ Software☐ Model☒ Requirements☐ Hardware

Which of the following is incorrect with respect to Model Checking?

Choices:

☐ Model checking is particularly valuable for verifying concurrent system.

☐ The model checker explores all possible paths through the model.

☐ Model checking is computationally very inexpensive.

☒ It supports partial verification.

System verification is impossible to achieve without the use of the right _____.

Choices:

☒ Modeling approach

☐ Static approach

☐ System approach

☐ Integrated approach

Transition System (TS) is called finite if _____.

Choices:

☐ S, Act, and AP are finite

☐ labeling function is finite

☐ S, I, and L are finite

☒ only S is finite

If Non-Deterministic Finite Automata (NFA) of 6 states excluding the initial state is converted into DFA, then maximum possible number of states for the DFA are _____.

Choices:

76



64



32



128



The maximum number of transitions which can be performed over a state in a (Deterministic Finite Automata) DFA are _____ where $\Sigma = \{a, b, c\}$.

Choices:

3



4



6



2



Deterministic Finite Automata state has _____.

Choices:

3 tuples



4 tuples



2 tuples



5 tuples



Number of final state(s) require to accept Φ in minimal finite automata.

Choices:

2



No final state requires.



1



3



Effect : $\text{Act} \times \text{Eval}(\text{Var}) \rightarrow \text{Eval}(\text{Var})$ is the _____.

Choices:

☒ effect function

☐ initial location

☐ initial condition

☐ set of actions

The nodes of a program graph are called _____.

Choices:

☒ edges

☐ notations

☐ locations

☐ elements