

Higher Information Systems

2006 q.24c Expert Systems Logic

Drumville College has over 5000 students attending classes in 102 courses in 64 classrooms, lecture theatres and practical rooms. Every year, it takes a member of staff several weeks to plan the timetable to ensure all the classes can take place as required.

c. The predicates below represent statements about student and classes.

Represent the following statements using predicate logic.

(i) Fiona takes the Tourism course and the Leisure Management course. **(2)**

(ii) All students who take Catering] also take Food Hygiene in class 1023. **(6)**

Predicate	Statement
takes(alison, catering2)	Alison takes the Catering2 course
class(2031, 45, catering2)	Class 2031 has 45 students in the Catering2 course
In class(alison, 2031)	Alison is in class 2031

2007 23c Expert Systems Logic

The knitting experience of the group can also be represented as a series of predicates, as shown below.

Represent the following statements in predicate logic:

(i). Ailsa is Grade 3 and has knitted a complex jumper; **(2)**

(ii). anyone who has knitted simple socks is graded grade 2. **(3)**

Predicate	Statement
has_knitted(janet, scarf, complex)	Janet has knitted a complex scarf
grade(calum, grade_1)	Calum is graded Grade 1.

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2007P q.29c Expert Systems Logic

Additional knowledge about elephants is to be represented using first order predicate logic. Use the information from below to represent the following statements in first order predicate logic:

- (i). All elephants are grey.
- (ii). African elephants have large ears. **(5)**

d. The knowledge about animals could have been stored in a relational database system rather than an expert system. Compare the two types of system in terms of the methods used to extract information and knowledge. **(2)**

2008 q.24 b Expert Systems Logic

b. The following rule was added to the expert system. Represent this rule using propositional logic.

If G and not L then N (3)

2009 25 Expert Systems Logic

The orders taken in a restaurant can be represented as a series of predicates, as follows. Represent the following statements in predicate logic.

- a. Martin orders steak for his main course, apple pie for dessert and is having beer to drink. **(2)**
- b. Any customer who orders chicken nuggets for a main course and a milkshake to drink is given ice cream for dessert. **(3)**

Predicate	Statement
<code>main(john, lasagne, red_wine)</code>	John orders lasagne for his main course and is having red wine to drink
<code>dessert(mary, fruit_salad)</code>	Mary orders fruit salad for dessert

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2009P q.25b Expert Systems Logic

Doonbrae Fitness operates a chain of 5 fitness centres and gyms. The company is considering having an expert system developed to help with the organisation of fitness classes and allocating instructors to these classes.

b. The statement that Callum is qualified to teach bodypump classes can be represented by the predicate:

qualified (callum, bodypump)

Represent the statement that Andrew is qualified to teach cyclespin and trimtome in predicate logic.