**CS 352 Programming Assignment #6 (20 points)**

1. Using Prolog to solve traditional problem.
2. Calculate BMI. BMI = Weight in Pounds / ( Height in inches)2 x 703; BMI = 0 if height is 0.

Test cases:

?- bmi(0,0,B).

B = 0 .

?- bmi(100,60,B).

B = 19.527777777777775.

?- bmi(150,72,B).

B = 20.341435185185187.

?- bmi(215,68,X).

X = 32.68706747404844.

1. Give two numbers a and b, if a >= b, the results will be a – b and a \* b; otherwise the results will be a + b and a / b. For example

?- pair(5,3,X,Y).

X = 2,

Y = 15.

?- pair(3,5,X,Y).

X = 8,

Y = 0.6.

1. Prolog queries.
2. Given the following facts:

has(jack,apples).

has(ann,plums).

has(dan,money).

fruit(apples).

fruit(plums).

What will be the answer for each of the following prolog questions?

?- has(jack,X).

?- has(X,apples), has(Y,plums).

?- has(dan, X), fruit(X).

?- has(X,Y), not fruit(Y).

1. A Prolog database contains clauses of the form: (type in the facts into a Prolog program.)

happy(bill).

happy(mary).

happy(john).

happy(alex).

sad(bill).

likes(john, corvettes).

likes(john,wine).

likes(john,book).

likes(mary, book).

likes(mary, corvettes).

likes(alex,corvettes).

Add the following rules to the program:

1. Anyone who likes book is smart
2. Anything that is liked by mary is valuable.

Then, query for (Note: find all the solutions)

?- happy(X).

?-likes(X, book).

?-smart(X).

?-valuable(X).

Also, add the following queries:

1. Anyone who is happy and sad.
2. Anyone who is happy and who likes book.

**Submission requirements:**

Save all codes in one file, and add all output to the end of the codes using block comment /\* … \*/ . Submit the file (one file only) to blackboard.