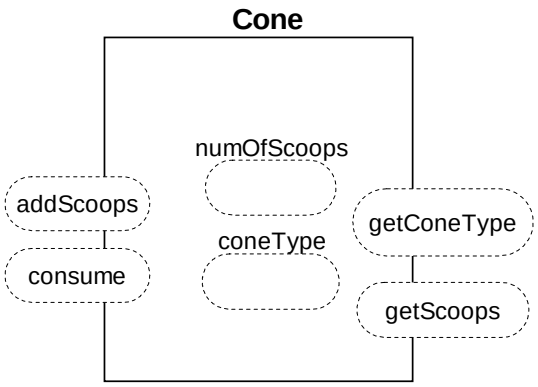
WEB-BASED APPLICATIONS
MIDTERM 1
SAMPLE QUESTIONS

Write the code for the instantiable class Cone that represents an ice cream cone. The following information is provided. *If something isn't specified, do something reasonable.*



`Cone(t, c)`
constructs an ice cream cone with **c** number of scoops and cone type of **t**.

`addScoops(n)`
adds **n** scoops to the ice cream cone.

`getScoops( )`
returns the number of scoops of the ice cream cone.

`consume()`
sets the number of scoops to 0 and the cone type to -1.

`getConeType()`
returns the type of the cone: 1 for wafer, 2 for sugar.

For the next five questions, determine if the message valid for the given method definition.

Indicate clearly that the message is valid or not valid. Assume the following:

- these variables exist and have been properly initialized,

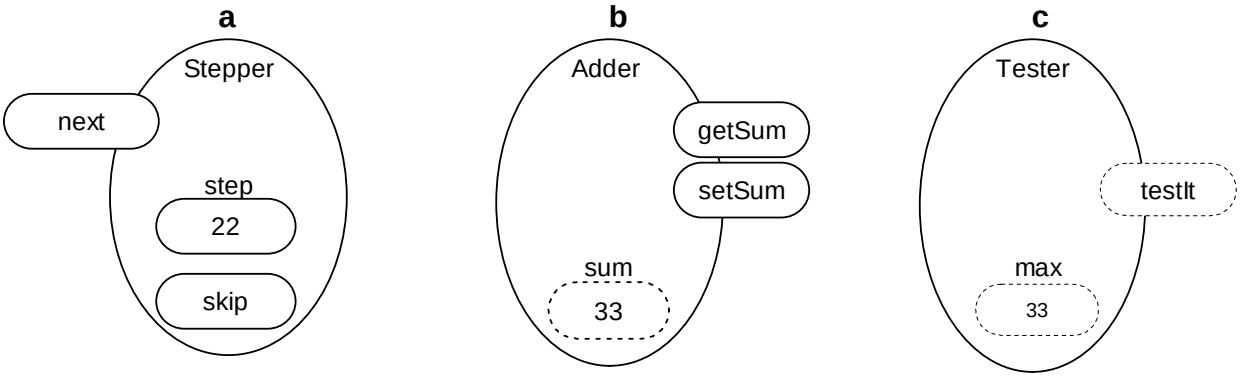
```
var i=4;
var d=5;
var o = new Test();
```

- the partial method definitions or declarations listed on the right are in the **constructor** of the Test object.

```
a. o.setData(22, d);          this.setData = function(val1, val2){…}
                                                    VALID     INVALID

b. o.question = 5;            var question;
                                                    VALID     INVALID

c. o.setMin(i)                this.setMin = function(val1, val2){…}
                                                    VALID     INVALID

d. o.level = 6;               this.level = function(val1) {…}
                                                    VALID     INVALID

e. o.setLevel(2)              this.setLevel(newLevel) = function() {…}
                                                    VALID     INVALID
```

Which of the following are correct declarations of an array?

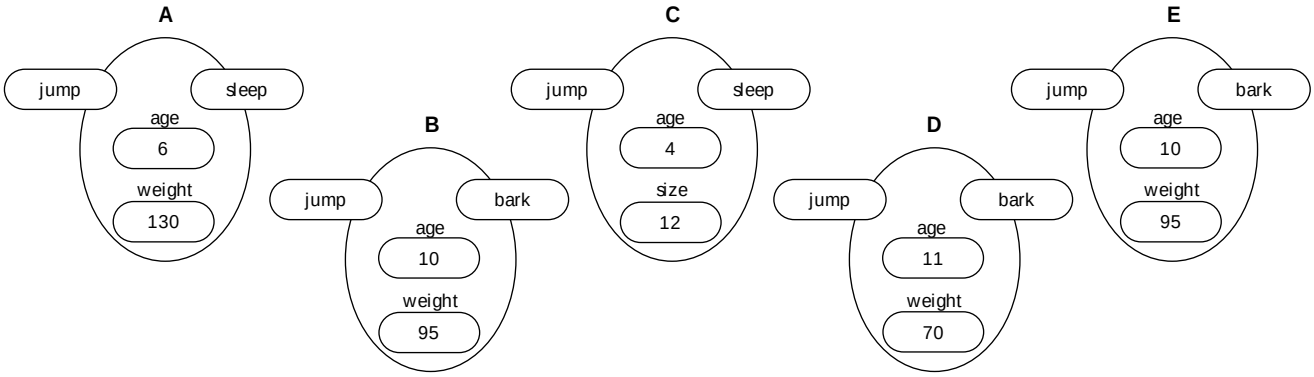
Consider the following object diagrams for three different classes of objects:



Which of these diagrams are valid object diagrams?

A. a only
B. b only
C. a and b only
D. b and c only
E. none

Consider the following five complete object diagrams:



Which one of the following is a valid statement about these diagrams?

A. Only B and E could be instances of the same class.
B. Only A and C could be instances of the same class.
C. Only B, D, and E could be instances of the same class.
D. A and C could be instances from one class, and B, D and E from another class.
E. All five could be instances of the same class.

Consider the following complete implementation of the Location class:

```
function Location (initX, initY){
      var x = initX;
      var y = initY;    // x-y coordinate of the position


      this.setX = function(newX) {
            x = newX;
      }

      this.setY = function(newY) {
            y = newY;
      }

      this.getX = function() {
            return x;
      }

      this.getY = function() {
            return y;
      }

}
```

Assume the variables below represent the month and the day of the month, and are assigned values within the valid ranges:

```
var month;  / /  valid range: 1 - 12
var day;    / /  valid range: 1 - 31
```

Which one of the following expresses the interval from 7/22 to 9/22?

```
A. (month >= 7) && (month <= 9) && (day <= 22)
B. ((month >= 7) && (day >= 22)) || ((month <= 9) && (day <= 22))
C. ((month == 7) || (month = = 9)) && ((day <= 22) || (month == 8))
D. ((month == 7) && (day >= 22)) && ((month == 9) && (day <= 22)) || (month == 8)
E. ((month == 7) && (day >= 22)) || (month == 8) || ((month == 9) && (day <= 22))
```

Which of the following boolean expression is equivalent to the following for **all values of A and B**. You can assume that A and B are declared as boolean. Note: if **A** is true, then **!A** will be false.

```
!(A && B);
```

```
A.    !A && !B
B.    A  && !B
C.    A  || !B
D.    !A || !B
E.    None of the above.
```

Consider the following poorly indented method in a function named Test:

```
function calculate(x, y, z) {
      if (x == 1)
      if (y == 5)
      return Math.pow (y, x);
      else
      return Math.pow (y, y);
      return Math.pow (y, z);
}
```

Which one of the following values is returned by the message `calculate(1, 2, 3)`?

A. 2
B. 4
C. 5
D. 8
E. none of the above

Consider the following code fragment:

```
var n = X;
while (n > 0) {
      alert(n);
      n = n - 1;
}
alert(n);
```

Which one of the following translations of the code above produces the same output as the code given for **all values of X**.

A.
```
for (n = X; n > 0; n++) {
      alert(n);
}
alert(n);
```

B.
```
var n;
for (n = X; n > 0; n--) {
      alert(n);
      n = n - 1;
}
alert(n);
```

C.
```
var n = X;
do {
      alert(n);
      n = n - 1;
} while (n > 0);
alert(n);
```

D.
```
var n = X;
if (n > 0) {
      do {
            alert(n);
            n--;
      } while (n > 0);
}
alert(n);
```

E.
```
int n = X;
do {
      if (n > 0)
            alert(n);
      n--;
} while (n > 0);
alert(n);
```

Consider the following two code fragments:

fragment 1

```
if (a == b) {
      if (c == d) {
            alert("A");
      }
}
else {
      alert("B");
}
```

fragment 2

```
if ((a == b) && (c == d))
      alert("A");
else
      alert("B");
```

Under which of the following conditions will the two fragments produce the same output?

i. Only a and b are the same values.
ii. Only c and d are the same values.
iii. Both a and b are the same values, and both c and d are the same values.

A. i only
B. iii only
C. i and iii only
D. ii and iii only
E. i, ii, and iii

Assume point is a Location object in the main method. Which one of the following code fragments from the main method in the Exam class will correctly indicate that the coordinate of the point object has moved from its current position `(x, y)` to `(x+1, y+1)`?

A.
```
Location (point.getX() + 1, point.getY() + 1);
```

B.
```
point.getX() = point.getX() + 1;
point.getY() = point.getY() + 1;
```

C.
```
point.y = point.y + 1;
point.x = point.x + 1;
```

D.
```
point.setX(point.x + 1);
point.setY(point.y + 1);
```

E.
```
point.setX(point.getX() + 1);
point.setY(point.getY() + 1);
```

Which one of the following correctly constructs a new Location object based on the constructor definition?

A.
```
Location (11, 22);
```

B.
```
var start = new location (11, 22);
```

C.
```
var x = 11;
var y = 22;
var new Location (x, y);
```

D.
```
var initX = 11;
Var initY = 22;
var start = new Location (initX, initY);
```

E.
```
var initX = 11;
var initY = 22;
var start = Location(initX, initY);
```