

Sample Multiple-Choice Question 01

01. Hornet High School uses a webserver that is physically located within the intranet of the Hornet Independent School District. Teachers use the webserver for online quizzes and tests. Access to the school webserver is done with the IP address 10.3.74.17

The school does not use a domain name, like *www.hornetserver.org*. Using a domain name is easier to remember than four numbers, but the school still prefers to use an IP address.

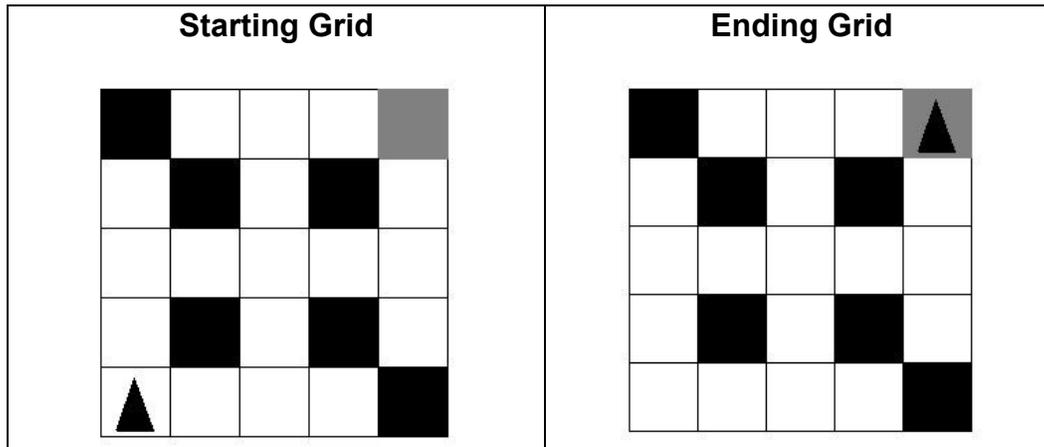
Which of the following are valid reasons to continue using an IP address and not a domain name?

- I. There is a yearly fee to be paid for using a domain name.
 - II. Connection to a computer on the intranet with an IP address is faster than using a domain name.
 - III. If the school has Internet access problems, the webserver is still accessible on the local intranet.
-
- (A) II only
 - (B) I & II only
 - (C) II & III only
 - (D) I, II & III

Sample Multiple-Choice Question 02

02. The question below uses a robot in a grid of squares. The robot is represented as a triangle, which initially is located in the bottom-left corner and facing toward the top of the grid. The robot is capable of moving into a white cell or a gray cell, it cannot move into a black cell.

For this question only, the `ROTATE_LEFT()` command IS NOT available.



Which of the following code segments can be used to move the robot to the gray square?

(A)	(B)	(C)	(D)
<pre> MOVE_FORWARD() MOVE_FORWARD() ROTATE_RIGHT() REPEAT 4 TIMES { MOVE_FORWARD() } REPEAT 3 TIMES { ROTATE_RIGHT() } MOVE_FORWARD() MOVE_FORWARD() </pre>	<pre> MOVE_FORWARD() MOVE_FORWARD() ROTATE_RIGHT() REPEAT 4 TIMES { MOVE_FORWARD() } ROTATE_LEFT() MOVE_FORWARD() MOVE_FORWARD() </pre>	<pre> ROTATE_RIGHT() REPEAT 4 TIMES { MOVE_FORWARD() } REPEAT 3 TIMES { ROTATE_RIGHT() } REPEAT 4 TIMES { MOVE_FORWARD() } ROTATE_RIGHT() REPEAT 3 TIMES { MOVE_FORWARD() } </pre>	<pre> ROTATE_RIGHT() MOVE_FORWARD() MOVE_FORWARD() REPEAT 3 TIMES { ROTATE_RIGHT() } REPEAT 4 TIMES { MOVE_FORWARD() } ROTATE_RIGHT() REPEAT 3 TIMES { MOVE_FORWARD() } </pre>

Sample Multiple-Choice Question 03

03. Which of the following is MOST likely to indicate a phishing attack?
- (A) A call from a Department of Motor Vehicles employee requesting personal information to help verify the new computer record updates.
 - (B) A call from a loan officer asking you to come to the bank office to verify loan information and sign the loan application.
 - (C) An email from a bank - with the last four digits of your debit card shown - stating that your debit card PIN must be reset on the online bank account.
 - (D) A call from a credit card fraud department investigating if three recent purchases were made by you.

Sample Multiple-Choice Question 04

04. Consider the following numbers in three different number bases.

Binary numbers will be indicated as base-2, like 101100 (base-2) .

Decimal numbers will be indicated with (base-10), like 6879 (base-10) .

Hexadecimal numbers will be indicated with (base-16), like a5f2bc (base-16) .

Which of the following are in ascending order, from left-to-right?

(A) 100 (base-10) - 1100100 (base-2) - 64 (base-16)

(B) FF (base-16) - 255 (base-10) - 11111111 (base-2)

(C) 139 (base-10) - 10001011 (base -2) - 8B (base-16)

(D) None of the above

Sample Multiple-Choice Question 05

05. An integer is called *perfect number* when the sum of its factors - except for the number itself - add up to the number.

Examples are :

$$6 = 1 + 2 + 3$$

$$28 = 1 + 2 + 4 + 7 + 14$$

$$496 = 1 + 2 + 4 + 8 + 16 + 31 + 62 + 124 + 248$$

Consider procedure `perfect` below. The intention of procedure `perfect` is to check if parameter `nbr` is a *perfect* number and then return `true` or return `false` otherwise.

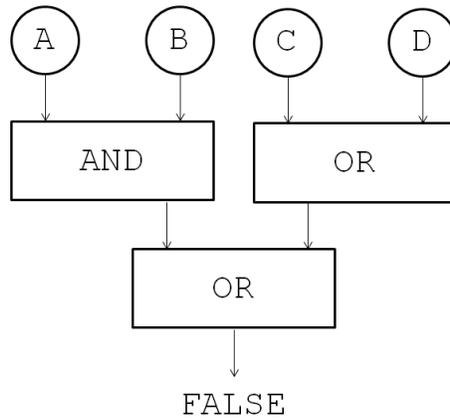
```
PROCEDURE perfect (nbr)
{
  count ← 1
  sum ← 0
  REPEAT UNTIL (count = nbr)
  {
    if (<MISSING CODE>)
    {
      sum = sum + count
    }
    count = count + 1
  }
  RETURN sum = nbr
}
```

Which of the following replacements for <MISSING CODE> results in procedure `perfect` correctly identifying *perfect* numbers?

- (A) `(count MOD nbr = 0)`
- (B) `(sum MOD count > 0)`
- (C) `(nbr MOD count = 0)`
- (D) `(nbr MOD count > 0)`

Sample Multiple-Choice Question 06

06. The diagram below represents a circuit with multiple logic gates with the Boolean operator AND or OR label. Every gate has two inputs and one output. The final output must be false.



The following inputs are known:

Input A is true

Input B is false

Input C is false

Input D is unknown

If the final output must be false, what must be the input value of D?

(A) true

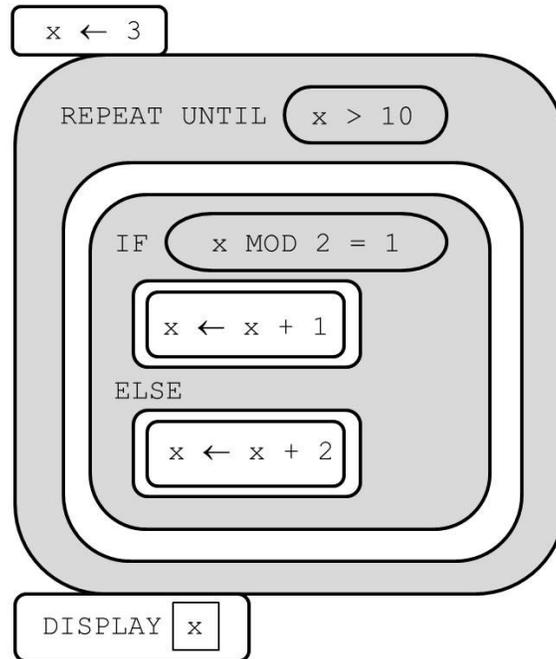
(B) false

(C) true or false

(D) Cannot be determined

Sample Multiple-Choice Question 07

07. Consider the following code segment.



What is displayed as a result of running the code segment?

- (A) 10
- (B) 11
- (C) 12
- (D) 13

Sample Multiple-Choice Question 08

08

The famous German mathematician *Gauss* already made a name for himself in the 4th grade. His class was asked to add all the integers from 1 to 100. *Gauss* did this in less than one minute and produced the correct result of 5050.

Gauss created a clever algorithm that adds consecutive integers from 1 to n , with n being the largest number. Which of the following algorithms will correctly perform such a result without the tedious one-number-at-a-time addition?

- (A) Step 1: Compute n plus 1
Step 2: Divide the result of Step-1 by 2
Step 3: Compute n minus 1
Step 4: Multiply the results of Step-2 and Step-3.
- (B) Step 1: Compute n divided by 2
Step 2: Compute n plus 1
Step 3: Multiply the results of Step-1 and Step-2.
- (C) Step 1: Compute n divided by 2
Step 2: Compute n minus 1
Step 3: Multiply the results of Step-1 and Step-2.
- (D) Step 1: Compute n divided by 2
Step 2: Compute n plus 2
Step 3: Multiply the results of Step-1 and Step-2.

Sample Multiple-Choice Question 09

09. Consider the code segment below.

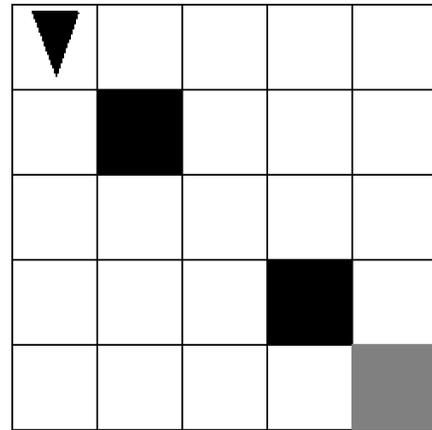
```
x ← RANDOM 10, 20
y ← RANDOM 30, 40
z ← RANDOM x, y
DISPLAY z
```

What is the range of possible integers displayed by executing the program?

- (A) [10..40]
- (B) [40..60]
- (C) [10..60]
- (D) [10..20 or 30..40]

Sample Multiple-Choice Question 10

10. The question uses a robot in a grid of cells. The robot is represented as a triangle, which initially is located in the top-left corner and facing down. The robot is capable of moving into a white cell or a gray cell, but it cannot move into a black cell.



Which of the following program code segments will move the robot into the gray cell as a result of running the program?

Select two answers.

(A)
 REPEAT 2 TIMES
 {
 MOVE_FORWARD()
 MOVE_FORWARD()
 ROTATE_LEFT()
 MOVE_FORWARD()
 ROTATE_RIGHT()
 }
 MOVE_FORWARD()
 MOVE_FORWARD()

(B)
 REPEAT 2 TIMES
 {
 MOVE_FORWARD()
 MOVE_FORWARD()
 ROTATE_LEFT()
 MOVE_FORWARD()
 ROTATE_RIGHT()
 }
 ROTATE_LEFT()
 MOVE_FORWARD()
 MOVE_FORWARD()

(C)
 ROTATE_LEFT()
 REPEAT 2 TIMES
 {
 REPEAT 4 TIMES
 {
 MOVE_FORWARD()
 }
 ROTATE_RIGHT()
 }

(D)
 ROTATE_LEFT()
 REPEAT 2 TIMES
 {
 MOVE_FORWARD()
 MOVE_FORWARD()
 ROTATE_RIGHT()
 MOVE_FORWARD()
 MOVE_FORWARD()
 ROTATE_LEFT()
 }