

Cypress Woods Invitational 2014

Scratch Division

Instructions & Guidelines:

1. You will have 2 hours to complete as many problems as you can.
2. Input, if needed to solve a program, will be given by a judge.
3. Once you think you have finished a problem, call over a judge and they will tell you if it is correct or not.
4. All problems are worth the same amount of points.
5. Winners will be determined based on who finishes the most problems in the least amount of time.
6. If you have any questions don't hesitate to ask a judge.

Problems

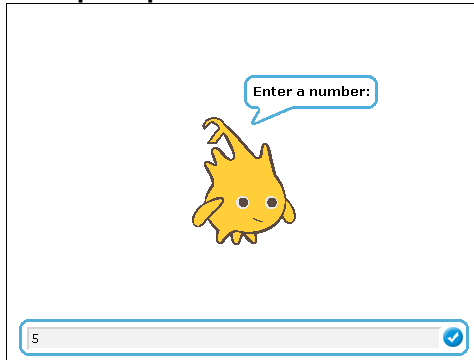
1. Sum of Nums
2. Temperature
3. Catch the Squirrel
4. Click & Color
5. Click Counter
6. Pump up the Ball
7. Checkout
8. Caesar Cipher
9. Speed Converter
10. Sum of Evens
11. Sum of Square Roots
12. Sides

1. Sum of Nums

Program Name: sumofnums.ypr

Given a number n , have Alonso calculate the sum of all the numbers between 0 and n

Example Input File

A screenshot of a user interface for a program. It features a yellow, spiky cartoon character with large eyes. Above the character is a blue speech bubble containing the text "Enter a number:". Below the character is a light gray input field with the number "5" entered. To the right of the input field is a blue circular button with a white checkmark.

Example Output to Screen



2. Temperature

Program Name: temperature.ypr

Alfonso is very sensitive when it comes to temperature. He is only comfortable at 70° F. Anything below is too cold and anything above is too hot.

Input

The sprite will ask for the temperature.

Output




The sprite will change color and make a statement according to the temperature.

When it's cold, the sprite turns blue and says "It's cold!"

When it's hot, the sprite turns red and says "It's hot!"

Otherwise, the sprite remains the same and says "It's nice!"

Example Input File

| | | |
|---|---|---|
|  What's the temperature? <input type="text" value="50"/> |  What's the temperature? <input type="text" value="80"/> |  What's the temperature? <input type="text" value="70"/> |
|---|---|---|

Example Output to Screen



3. Catch the Squirrel

Program Name: squirrel.ypr

There is a squirrel on the loose. It has been reported that it appears at random locations between $(-100, -100)$ and $(100, 100)$. Have Alonso draw a box around the squirrel to catch it.

Output

Every time the squirrel appears, it should have a box around it.

Example Output to Screen

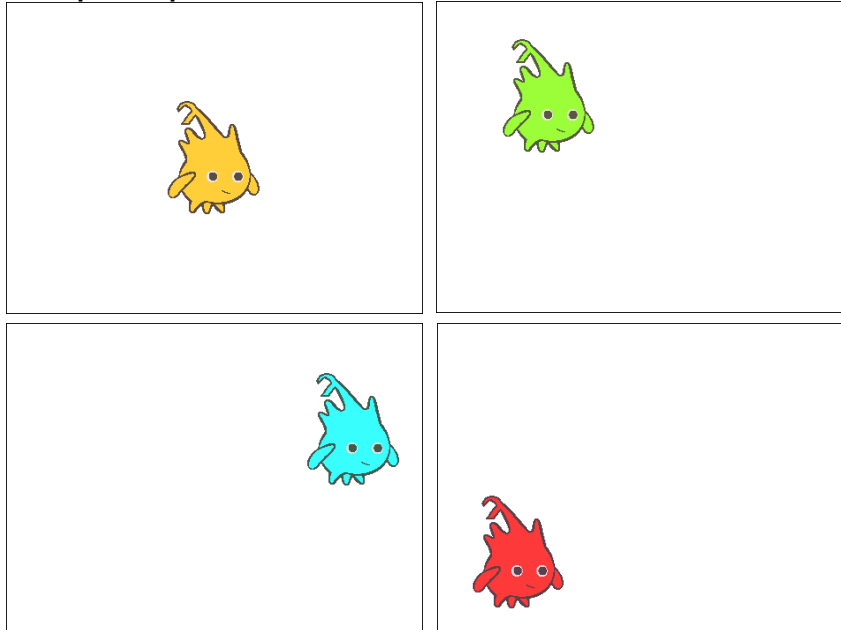


4. Click & Color

Program Name: colorclick.ypr

Alonso starts at the middle of the screen. Every time the stage is clicked, Alonso moves to the clicked spot and changes color.

Example Output to Screen



5. Click Counter

Program Name: clickcount.ypr

Count how many times Alonso is clicked.

Example Output to Screen



6. Pump up the Ball

Program Name: pump.ypr

Help Alonso inflate and deflate his soccer ball.

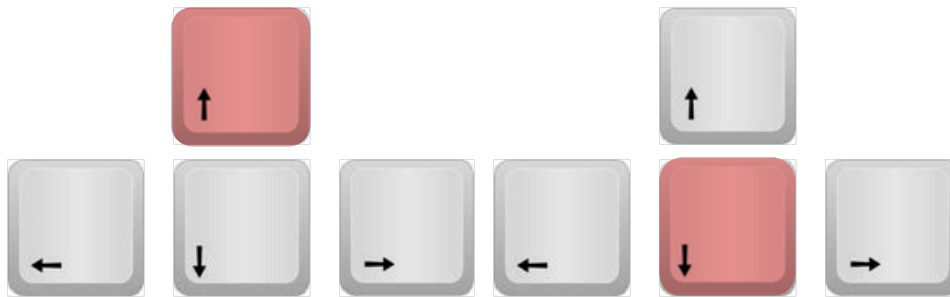
Input

Press the up arrow to inflate the ball. Press the down arrow to deflate the ball.

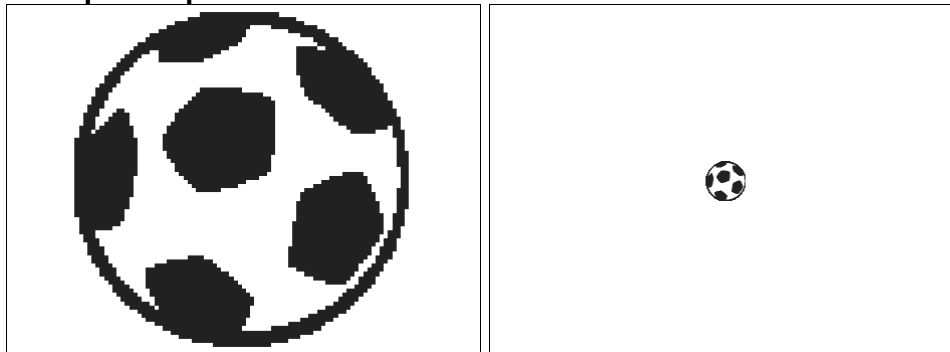
Output

Change the size of the ball to show it inflating and deflating.

Example Input



Example Output



7. Checkout

Program Name: checkout.ypr

Alonso is a cashier. Given a list of prices, have him say the total.



Input

Tell Alonso how many items you have and the price of each.

Output

Alonso will say the total.

Example Input File

| | |
|--|---|
|  <p>How many items?</p> <input type="text" value="5"/> | <div>items (empty) + length: 0</div> |
|  <p>What is the price?</p> <input type="text" value="9"/> | <div>items 1 4 2 13 3 5 4 9 + length: 4</div> |

Example Output to Screen



Your total is \$38

items
1 4
2 13
3 5
4 9
5 9
+ length: 5

8. Caesar Cipher

Program Name: cipher.ypr

Alonso has been hired to encrypt Julius Caesar's messages using a Caesar cipher. During encryption, each letter in the plaintext is replaced by a letter some fixed number of positions down the alphabet. For example, with a left shift of 3, D would be replaced by A, E would become B, and so on.

Encryption of a letter, x , by a shift, n , can be described mathematically as

$$E_n(x) = (x + n) \mod 26.$$


Input

Give Alonso a shift and a message to encrypt.

Output

Alonso will say the encrypted message.

Example Input File

| | |
|--|---|
| <div>shift 0</div> <div>Shift:</div> <div></div> <div><input type="text"/></div> | <div>shift 3</div> <div>What's your message?</div> <div></div> <div><input type="text" value="Brutus and bananas"/></div> |
|--|---|

Example Output to Screen

shift 3

EUXWXV DQG
EDQDQDV



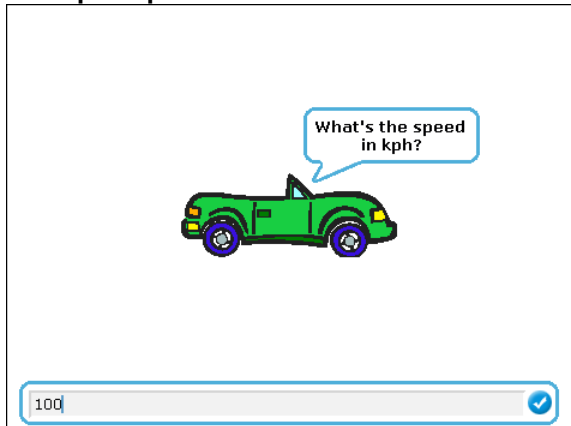
9. Speed Converter

Program Name: speed.ypr

Alonso moved to the US from Spain and brought his car with him. Problem is that his car measures speed in kph. Help him convert the speed from kph to mph.

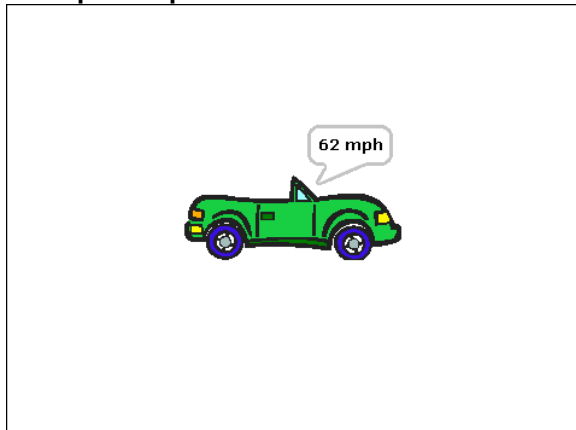
$$1 \text{ km} = 0.62 \text{ mi}$$

Example Input



A screenshot of a web application interface. It features a green convertible car icon with a speech bubble above it that says "What's the speed in kph?". Below the car is a text input field containing the number "100" and a blue checkmark button on the right.

Example Output

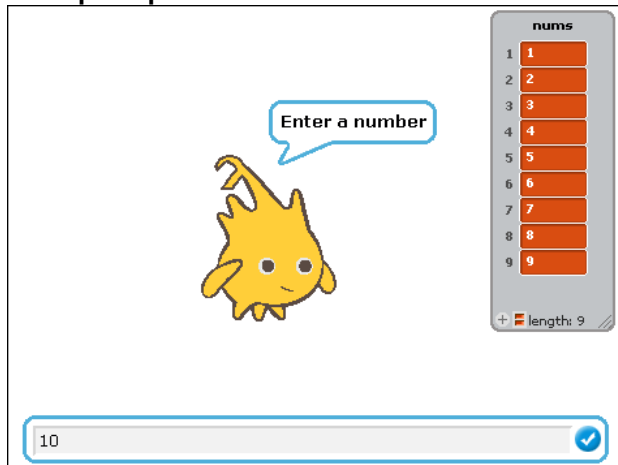


10. Sum of Evens

Program Name: sumofevens.ypr

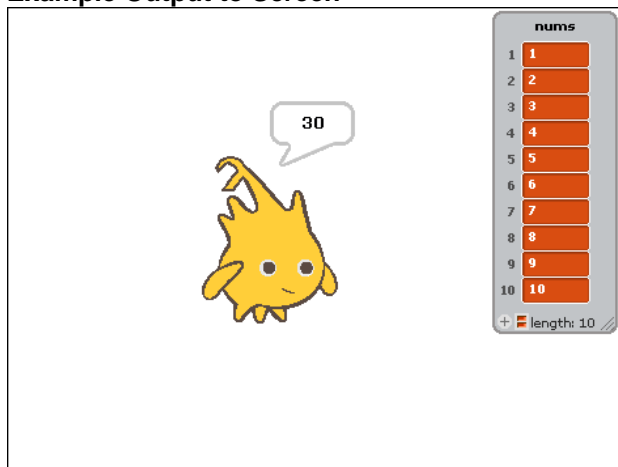
Find the sum of all the even numbers in a list of 10 numbers.

Example Input File



A screenshot of a program interface. On the left, a yellow cartoon character with a speech bubble that says "Enter a number". On the right, a vertical list of 10 orange input boxes labeled "nums" with indices 1 through 9. The first box contains the number 1. Below the list, a small text says "length: 9". At the bottom, a horizontal input field contains the number 10 and a blue checkmark button.

Example Output to Screen







A screenshot of the same program interface. The yellow cartoon character now has a speech bubble that says "30". The vertical list of 10 orange input boxes labeled "nums" now has 10 boxes, with indices 1 through 10. The first 9 boxes contain the numbers 1 through 9, and the 10th box contains the number 10. Below the list, a small text says "length: 10".

11. Sum of Square Roots


Program Name: sumofsqrts.ypr

Given 4 numbers, find the sum of their square roots.

Example Input

| | |
|---|--|
|  Enter a number: <input type="text" value="25"/> |  Enter a number: <input type="text" value="64"/> |
|  Enter a number: <input type="text" value="144"/> |  Enter a number: <input type="text" value="36"/> |

Example Output


31.0

12. Sides

Program Name: sides.ypr

Alonso likes to draw shapes. Tell him how many sides a shape has and he will draw it.

Input

Tell Alonso how many sides the shape should have.

Output

Alonso will draw a shape with the given number of sides.

Example Input File

| | |
|--|--|
| <div>sides 0</div> <div>How many sides?</div> <div>0</div> | <div>sides 0</div> <div>How many sides?</div> <div>5</div> |
|--|--|

Example Output to Screen

