# Problem 1

You are given an array of objects representing items to be put in a knapsack. The objects have 3 attributes: name, weight, and value. The items need to be selected so that the total weight does not exceed the maximum weight and the value is maximized.

knapsack([{ name:'map', weight:9, value:150 }, { name:'compass', weight:13, value:35 }, { name:'water', weight:153, value:200 }, { name:'sandwich', weight:50, value:160 }, { name:'glucose', weight:15, value:60 }, { name:'tin', weight:68, value:45 }, { name:'banana', weight:27, value:60 }, { name:'apple', weight:39, value:40 }], 100) should return 405.

knapsack([{ name:'map', weight:9, value:150 }, { name:'compass', weight:13, value:35 }, { name:'water', weight:153, value:200 }, { name:'sandwich', weight:50, value:160 }, { name:'glucose', weight:15, value:60 }, { name:'tin', weight:68, value:45 }, { name:'banana', weight:27, value:60 }, { name:'apple', weight:39, value:40 }], 200) should return 510.

knapsack([{ name:'cheese', weight:23, value:30 }, { name:'beer', weight:52, value:10 }, { name:'suntan cream', weight:11, value:70 }, { name:'camera', weight:32, value:30 }, { name:'T-shirt', weight:24, value:15 }, { name:'trousers', weight:48, value:10 }, { name:'umbrella', weight:73, value:40 }], 100) should return 145.

knapsack([{ name:'cheese', weight:23, value:30 }, { name:'beer', weight:52, value:10 }, { name:'suntan cream', weight:11, value:70 }, { name:'camera', weight:32, value:30 }, { name:'T-shirt', weight:24, value:15 }, { name:'trousers', weight:48, value:10 }, { name:'umbrella', weight:73, value:40 }], 200) should return 185.

knapsack([{ name:'waterproof trousers', weight:42, value:70 }, { name:'waterproof overclothes', weight:43, value:75 }, { name:'note-case', weight:22, value:80 }, { name:'sunglasses', weight:7, value:20 }, { name:'towel', weight:18, value:12 }, { name:'socks', weight:4, value:50 }, { name:'book', weight:30, value:10 }], 100) should return 237.

knapsack([{ name:'waterproof trousers', weight:42, value:70 }, { name:'waterproof overclothes', weight:43, value:75 }, { name:'note-case', weight:22, value:80 }, { name:'sunglasses', weight:7, value:20 }, { name:'towel', weight:18, value:12 }, { name:'socks', weight:4, value:50 }, { name:'book', weight:30, value:10 }], 200) should return 317.'

# Problem 2

Given a string (string brackets) containing just the characters '(', ')', '{', '}', '[' and ']', return a result to determine if the input string is valid. A valid string must adhere to the following rules:

=> Open brackets must be closed by the same type of brackets.

=> Open brackets must be closed in the correct order.

Example

( ) [ ] { } should return true

( [ ) ] should return false

{ { [] ( } } ) should return false

{ [ ( ) ] } should return true

# Problem 3

Given a short video, (use your own > 60 second video), use OpenCV to clip a 5 second clip from the 00:30 mark to the 00:35 mark and draw a red 100 x 100 pixel sized box in the middle of the video.