

# Online Sponsored Ads

## General

As an ad tech company we want to develop a module that enables sellers to create campaigns for promoting their products.

## Entities

There are (at least) two main entities composing this module:

1. `Product` - simply represents a product with title, category, price and product-serial number (can be any int/string-sequence for the sake of this exercise)
2. `Campaign` - a group of products to promote(/advertise) with shared properties: start-date, bid. As well, the campaign has a name.
  - a. Campaign is considered active for the 10 days following its start-date.
  - b. Different campaigns may promote the same product

## APIs

The module should provide 2 APIs:

1. ***Create campaign*** - api for creating a campaign
  - a. Parameters:
    - i. name
    - ii. startDate
    - iii. List of product identifiers to promote.
    - iv. Bid - the price seller is willing to pay for a click on a product advertised in this campaign
  - b. Expected result: a campaign is created (with specified parameters) ready to promote all products
  - c. Response - a json representation of the created campaign
2. ***Serve Ad*** - api to retrieve ads
  - a. Parameters:
    - i. Category - a String representing category of products
  - b. Expected Result:
    - i. the api should return a single promoted product, the one with the highest bid, belonging to active campaign/s from the specified category. If there are no promoted product for the matching category simply return a promoted product

with the highest bid.

- For simplicity, if more than one product is found, you may return the first or random.

ii. The response should be in JSON format

- **Bonus: try to optimize the query for products by category**

## Assumptions

On initialization you may generate a bulk of products, each with random category (select one from few possibilities), price (random or even fixed), and some unique product-serial number.