

Task 1

Inspect the provided json object and write code which re-shapes it into a data structure suitable for rendering the tabular report shown at the bottom of this document.

Task 2

Write a function which, given an array of strings and a metric ID (int), will return a numeric value (float). The function should be able to handle a tree of any depth.

For example, using the provided json data a suitable call to the function would look like this;

Function call: `extractValueFromTree(["PPC - Brand", "2016-10-10 (Mon)"], 141)`

Result: 8.597356826336

Notes

- Your solutions do not have to be perfect or even necessarily fully functional but are intended to provide a starting point for conversations during interview.
- Your solutions give us an opportunity to judge the depth of your technical knowledge and capabilities.
- Hint: The json object intentionally contains a lot of attributes which are not relevant to these tasks!

```
{
  "dval" : null,
  "path" : [],
  "metrics" : {
    "93" : {
      "value" : 700.68269858509,
      "comparisons" : [],
      "uplifts" : [],
      "forecast" : null
    },
    "115" : {
      "value" : 4015.2421,
      "comparisons" : [],
      "uplifts" : [],
      "forecast" : null
    },
    "141" : {
      "value" : 5.7304713076377,
      "comparisons" : [],
      "uplifts" : [],
      "forecast" : null
    }
  },
  "children" : [
    {
      "dval" : {
        "id" : 73,
        "dimension_id" : 915,
        "value" : "Affiliates - Prospect",
        "name" : null,
        "colour" : null,
        "filtered" : false
      },
      "path" : [],
      "metrics" : {
        "93" : {
          "value" : 58.920954219997,
          "comparisons" : [],
          "uplifts" : [],
          "forecast" : null
        },
        "115" : {
          "value" : 230.58,
          "comparisons" : [],
          "uplifts" : [],
          "forecast" : null
        },
        "141" : {
          "value" : 3.9133785773236,
          "comparisons" : [],
          "uplifts" : [],
          "forecast" : null
        }
      },
      "children" : [
        {
          "dval" : {
            "value" : "2016-10-09 (Sun)",
            "filtered" : false
          },
          "path" : [],
          "metrics" : {
            "93" : {
              "value" : 20.027208067477,
              "comparisons" : [],
              "uplifts" : [],
              "forecast" : null
            },
            "115" : {
              "value" : "100.17000",
              "comparisons" : [],
              "uplifts" : [],
              "forecast" : null
            },
            "141" : {
              "value" : 5.001695676327,
              "comparisons" : []
            }
          }
        }
      ]
    }
  ]
}
```

```

        "uplifts" : [],
        "forecast" : null
    },
    {
        "children" : [],
        "natural" : true,
        "filtered" : false
    },
    {
        "dval" : {
            "value" : "2016-10-10 (Mon)",
            "filtered" : false
        },
        "path" : [],
        "metrics" : {
            "93" : {
                "value" : 21.602804124355,
                "comparisons" : [],
                "uplifts" : [],
                "forecast" : null
            },
            "115" : {
                "value" : "67.62000",
                "comparisons" : [],
                "uplifts" : [],
                "forecast" : null
            },
            "141" : {
                "value" : 3.1301491977963,
                "comparisons" : [],
                "uplifts" : [],
                "forecast" : null
            }
        },
        "children" : [],
        "natural" : true,
        "filtered" : false
    },
    {
        "dval" : {
            "value" : "2016-10-11 (Tue)",
            "filtered" : false
        },
        "path" : [],
        "metrics" : {
            "93" : {
                "value" : 17.290942028165,
                "comparisons" : [],
                "uplifts" : [],
                "forecast" : null
            },
            "115" : {
                "value" : "62.79000",
                "comparisons" : [],
                "uplifts" : [],
                "forecast" : null
            },
            "141" : {
                "value" : 3.6313810952418,
                "comparisons" : [],
                "uplifts" : [],
                "forecast" : null
            }
        },
        "children" : [],
        "natural" : true,
        "filtered" : false
    },
    {
        "natural" : true,
        "filtered" : false
    },
    {
        "dval" : {
            "id" : 79,
            "dimension_id" : 915,
            "value" : "Direct",
            "name" : null,
            "colour" : null,
            "filtered" : false
        },
        "path" : [],
        "metrics" : {
            "93" : {
                "value" : 246.68980351835,
                "comparisons" : [],
                "uplifts" : [],
                "forecast" : null
            },
            "115" : {
                "value" : 22.0935,
                "comparisons" : [],
                "uplifts" : [],
                "forecast" : null
            },
            "141" : {
                "value" : 0.089559842704875,
                "comparisons" : [],
                "uplifts" : [],
                "forecast" : null
            }
        },
        "children" : [
            {
                "dval" : {
                    "value" : "2016-10-09 (Sun)",
                    "filtered" : false
                },
                "path" : [],
                "metrics" : {
                    "93" : {
                        "value" : 93.233933582902,
                        "comparisons" : [],
                        "uplifts" : [],
                        "forecast" : null
                    },
                    "115" : {
                        "value" : "7.52510",
                        "comparisons" : [],
                        "uplifts" : [],
                        "forecast" : null
                    },
                    "141" : {
                        "value" : 0.080712029524195,
                        "comparisons" : [],
                        "uplifts" : [],

```

```

        "forecast" : null
    },
    "children" : [],
    "natural" : true,
    "filtered" : false
},
{
    "dval" : {
        "value" : "2016-10-10 (Mon)",
        "filtered" : false
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    "path" : [],
    "metrics" : {
        "93" : {
            "value" : 92.631204426289,
            "comparisons" : [],
            "uplifts" : [],
            "forecast" : null
        },
        "115" : {
            "value" : "8.37100",
            "comparisons" : [],
            "uplifts" : [],
            "forecast" : null
        },
        "141" : {
            "value" : 0.090369115373656,
            "comparisons" : [],
            "uplifts" : [],
            "forecast" : null
        }
    },
    "children" : [],
    "natural" : true,
    "filtered" : false
},
{
    "dval" : {
        "value" : "2016-10-11 (Tue)",
        "filtered" : false
    },
    "path" : [],
    "metrics" : {
        "93" : {
            "value" : 60.824665509164,
            "comparisons" : [],
            "uplifts" : [],
            "forecast" : null
        },
        "115" : {
            "value" : "6.19740",
            "comparisons" : [],
            "uplifts" : [],
            "forecast" : null
        },
        "141" : {
            "value" : 0.10188958620851,
            "comparisons" : [],
            "uplifts" : [],
            "forecast" : null
        }
    },
    "children" : [],
    "natural" : true,
    "filtered" : false
},
    "natural" : true,
    "filtered" : false
},
{
    "dval" : {
        "id" : 77,
        "dimension_id" : 915,
        "value" : "PPC - Brand",
        "name" : null,
        "colour" : null,
        "filtered" : false
    },
    "path" : [],
    "metrics" : {
        "93" : {
            "value" : 308.44193121791,
            "comparisons" : [],
            "uplifts" : [],
            "forecast" : null
        },
        "115" : {
            "value" : 2761.71,
            "comparisons" : [],
            "uplifts" : [],
            "forecast" : null
        },
        "141" : {
            "value" : 8.9537437049987,
            "comparisons" : [],
            "uplifts" : [],
            "forecast" : null
        }
    },
    "children" : [
        {
            "dval" : {
                "value" : "2016-10-09 (Sun)",
                "filtered" : false
            },
            "path" : [],
            "metrics" : {
                "93" : {
                    "value" : 105.21378145367,
                    "comparisons" : [],
                    "uplifts" : [],
                    "forecast" : null
                },
                "115" : {
                    "value" : "956.55000",
                    "comparisons" : [],
                    "uplifts" : [],
                    "forecast" : null
                },
                "141" : {
                    "value" : 9.0914896013048,
                    "comparisons" : [],
                    "uplifts" : [],
                    "forecast" : null
                }
            }
        }
    ]
}

```

```

    },
    "children" : [],
    "natural" : true,
    "filtered" : false
  },
  {
    "dval" : {
      "value" : "2016-10-10 (Mon)",
      "filtered" : false
    },
    "path" : [],
    "metrics" : {
      "93" : {
        "value" : 111.30979198962,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      },
      "115" : {
        "value" : "956.97000",
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      },
      "141" : {
        "value" : 8.597356826336,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      }
    },
    "children" : [],
    "natural" : true,
    "filtered" : false
  },
  {
    "dval" : {
      "value" : "2016-10-11 (Tue)",
      "filtered" : false
    },
    "path" : [],
    "metrics" : {
      "93" : {
        "value" : 91.918357774615,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      },
      "115" : {
        "value" : "848.19000",
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      },
      "141" : {
        "value" : 9.2276452771249,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      }
    },
    "children" : [],
    "natural" : true,
    "filtered" : false
  },
  {
    "natural" : true,
    "filtered" : false
  },
  {
    "dval" : {
      "id" : 74,
      "dimension_id" : 915,
      "value" : "PPC - Generic",
      "name" : null,
      "colour" : null,
      "filtered" : false
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    "path" : [],
    "metrics" : {
      "93" : {
        "value" : 18.693437203765,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
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      "115" : {
        "value" : 994.56,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      },
      "141" : {
        "value" : 53.203698664882,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      }
    },
    "children" : [
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        "dval" : {
          "value" : "2016-10-09 (Sun)",
          "filtered" : false
        },
        "path" : [],
        "metrics" : {
          "93" : {
            "value" : 6.4074809551239,
            "comparisons" : [],
            "uplifts" : [],
            "forecast" : null
          },
          "115" : {
            "value" : "314.16000",
            "comparisons" : [],
            "uplifts" : [],
            "forecast" : null
          },
          "141" : {
            "value" : 49.030188649843,
            "comparisons" : [],
            "uplifts" : [],
            "forecast" : null
          }
        }
      }
    ]
  }
]

```

```

    },
    "children" : [],
    "natural" : true,
    "filtered" : false
  },
  {
    "dval" : {
      "value" : "2016-10-10 (Mon)",
      "filtered" : false
    },
    "path" : [],
    "metrics" : {
      "93" : {
        "value" : 8.874253988266,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      },
      "115" : {
        "value" : "333.06000",
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      },
      "141" : {
        "value" : 37.531042095526,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      }
    },
    "children" : [],
    "natural" : true,
    "filtered" : false
  },
  {
    "dval" : {
      "value" : "2016-10-11 (Tue)",
      "filtered" : false
    },
    "path" : [],
    "metrics" : {
      "93" : {
        "value" : 3.411702260375,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      },
      "115" : {
        "value" : "347.34000",
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      },
      "141" : {
        "value" : 101.8084151229,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      }
    },
    "children" : [],
    "natural" : true,
    "filtered" : false
  }
],
"natural" : true,
"filtered" : false
},
{
  "dval" : {
    "id" : 80,
    "dimension_id" : 915,
    "value" : "SEO - Brand",
    "name" : null,
    "colour" : null,
    "filtered" : false
  },
  "path" : [],
  "metrics" : {
    "93" : {
      "value" : 67.936572425067,
      "comparisons" : [],
      "uplifts" : [],
      "forecast" : null
    },
    "115" : {
      "value" : 6.2986,
      "comparisons" : [],
      "uplifts" : [],
      "forecast" : null
    },
    "141" : {
      "value" : 0.092712949375644,
      "comparisons" : [],
      "uplifts" : [],
      "forecast" : null
    }
  }
},
"children" : [
  {
    "dval" : {
      "value" : "2016-10-09 (Sun)",
      "filtered" : false
    },
    "path" : [],
    "metrics" : {
      "93" : {
        "value" : 22.192870847881,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      },
      "115" : {
        "value" : "2.55200",
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      },
      "141" : {
        "value" : 0.11499188264071,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      }
    }
  }
],

```

```

    "children" : [],
    "natural" : true,
    "filtered" : false
  },
  {
    "dval" : {
      "value" : "2016-10-10 (Mon)",
      "filtered" : false
    },
    "path" : [],
    "metrics" : {
      "93" : {
        "value" : 27.456408284605,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      },
      "115" : {
        "value" : "2.25170",
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      },
      "141" : {
        "value" : 0.082009998418568,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      }
    },
    "children" : [],
    "natural" : true,
    "filtered" : false
  },
  {
    "dval" : {
      "value" : "2016-10-11 (Tue)",
      "filtered" : false
    },
    "path" : [],
    "metrics" : {
      "93" : {
        "value" : 18.287293292582,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      },
      "115" : {
        "value" : "1.49490",
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      },
      "141" : {
        "value" : 0.081745284886221,
        "comparisons" : [],
        "uplifts" : [],
        "forecast" : null
      }
    },
    "children" : [],
    "natural" : true,
    "filtered" : false
  }
],
"natural" : true,
"filtered" : false
},
"natural" : true,
"filtered" : false
}

```

Attribution v Last Click : Orders & CPA				
	2016-10-09 (Sun)	2016-10-10 (Mon)	2016-10-11 (Tue)	Total
Affiliates - Prospect	£5	£3.13	£3.63	£3.91
Direct	£0.08	£0.09	£0.1	£0.09
PPC - Brand	£9.09	£8.6	£9.23	£8.95
PPC - Generic	£49.03	£37.53	£101.81	£53.2
SEO - Brand	£0.11	£0.08	£0.08	£0.09