COMMON PITFALLS: HW 1, PART 5

1. About this document

As part of an ongoing research project to provide high quality autonomous feedback in online courses, we are making this list of common errors from Homework 1 available to all current students. This list was generated by automatically mining "exemplar submissions" from hundreds of thousands of submissions in the previous iteration of this course. If you have any questions, complaints or general feedback, please email codewebresearch@gmail.com. And stay tuned for the release of our interactive feedback tool in a future homework!

2. Common Errors

Error 1. (Forgetting to divide by $2m$)

```
function J = computeCostMulti (X, y, theta)
  m = length (y);
  J = 0;
  J = (X * theta - y)' * (X * theta - y)
```

Error 2. (Multiplying X by θ in the wrong order)

As with part 2, a common error resulted from using $\theta \cdot X(i,:)$ (which gives a 2×2 matrix) instead of $X(i,:) \cdot \theta$.

```
function J = computeCostMulti (X, y, theta)
  m = length (y);
  J = 0;
  for i = 1:m
    J = J + (theta * X (i, :) - y (i)) ^ 2
  endfor;
  J = J / (2 * m);
```

Error 3. (Hardcoding the dimension)

As with part 4, a large number of submissions implicitly assumed a number of dimensions for X, where we really wanted a solution that worked for any number of feature dimensions. The following example works for a 3-dimensional X, but not otherwise.

```
function J = computeCostMulti (X, y, theta)
  m = length (y);
  J = 0;
  for i = 1:m
    J = J + ((theta (1) * X (i, 1) + theta (2) * X (i, 2)
                        + theta (3) * X (i, 3) - y (i))) ^ 2;
  endfor;
  J = J / (2 * m);
```