Subject: Can this be vectorized?
Posted by davis on Tue, 26 Oct 1999 07:00:00 GMT
View Forum Message <> Reply to Message

I am looking for either a matlab or IDL solution to this problem.
Suppose that I have two 1-d arrays, `I' and `X', where `I' is an integer array and `X' is a floating point array. `I' is assumed to be sorted in ascending order. I would like to produce a third array `Y' that is formed from the elements of `X' as follows (pseudocode):

```
  len = length (X);       #number of elements of X

  i = 0;
  j = 0;

  while (i < len)
    {
      last_I = I[i];
      sum = X[i];
i = i + 1;
while ((i < len)
      AND (I[i] == last_I))
  {
    sum = sum + X[i];
    i = i + 1;
  }
Y[j] = sum;
j = j + 1;
    }
```

For example, suppose

```
   I = [ 1 2 3 3 4 4 4 5]
   X = [ a b c d e f g h]
```

Then, Y would be 5 element array:

```
  Y = [a b (c+d) (e+f+g) h]
```

One partially vectorized pseudocode solution would be:

```
  jj = 0
  for (i = min(I) to max(I))
    {
      J = WHERE (I == i);
Y[jj] = sum_elements (X[J])
jj = jj + 1
    }
```

What is the best way to vectorize this? In reality, X consists of about one million elements, so I would prefer a solution that is memory efficient. I apologize for posting to both newsgroups, but I am looking for a solution in either language.

Thanks,
--John
