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How Can I Vectorize Function With If Statement?

Asked by Joseph on 7 Oct 2011
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I have a function defined like:

```
function result = myfunc(x)

    if x > 3
        result = 0;
    else
        result = 1;
    end

end
```

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And I would like to figure out how to vectorize it such that if I pass a vector x = 1:10 then it gives me back a vector with ones and zeros in the right spot. Instead I get this:

```
>> x = 1:10;
>> result = myfunc(x);
    ans = 1
```

But I don't want a scalar 1 returned I need a vector returned corresponding to each element of x.

I thought I could do:

```
v_myfunc = vectorize(myfunc)
```

But that unfortunately just gave an error so that is apparently not the thing to do.

NOTE My actual function is much more complicated but solving this simple example will fix many of my problems I think so please don't say "Just do result = ones(size(x)); result(x > 3) = 0;" since I really need to vectorize functions with if statements inside and so please answer how I can vectorize such a thing. If someone can help me figure out how to vectorize functions with if statements such as these that will be **most** helpful.

Thank you!

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Answer by Fangjun Jiang on 7 Oct 2011

```
>> a=1:10
a =
     1     2     3     4     5     6     7     8
>> b=arrayfun(@myfunc,a)
b =
     1     1     1     0     0     0     0     0
```

The point is, if you want your function to be able to deal with vector or matrix, the function has to be designed that way. If the function deals with scalar only, then MATLAB function arrayfun(),cellfun() and structfun() can help you go around.

1 Comment

Joseph on 7 Oct 2011

Thanks, that does it!

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Answer by Walter Roberson on 7 Oct 2011

```
function result = myfunc(x);
  result = zeros(size(x));
  idx1 = x>3;
  idx2 = (x.^2 + x) > 9;
  result(idx1) = 1;
  result(idx2) = 2;
  result(~(idx1|idx2)) = 3;
```

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