

## tf.qr

## Contents

## Aliases:

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- `tf.linalg.qr`
- `tf.qr`

```
qr(  
    input,  
    full_matrices=False,  
    name=None  
)
```

Defined in `tensorflow/python/ops/gen_linalg_ops.py`.

See the guide: [Math > Matrix Math Functions](#)

Computes the QR decompositions of one or more matrices.

Computes the QR decomposition of each inner matrix in `tensor` such that `tensor[..., :, :] = q[..., :, :] * r[..., :, :]`

```
# a is a tensor.  
# q is a tensor of orthonormal matrices.  
# r is a tensor of upper triangular matrices.  
q, r = qr(a)  
q_full, r_full = qr(a, full_matrices=True)
```

## Args:

- `input`: A `Tensor`. Must be one of the following types: `float64`, `float32`, `complex64`, `complex128`. A tensor of shape `[..., M, N]` whose inner-most 2 dimensions form matrices of size `[M, N]`. Let `P` be the minimum of `M` and `N`.
- `full_matrices`: An optional `bool`. Defaults to `False`. If true, compute full-sized `q` and `r`. If false (the default), compute only the leading `P` columns of `q`.
- `name`: A name for the operation (optional).

## Returns:

A tuple of `Tensor` objects (q, r).

- `q`: A `Tensor`. Has the same type as `input`. Orthonormal basis for range of `a`. If `full_matrices` is `False` then shape is `[..., M, P]`; if `full_matrices` is `True` then shape is `[..., M, M]`.
- `r`: A `Tensor`. Has the same type as `input`. Triangular factor. If `full_matrices` is `False` then shape is `[..., P, N]`. If `full_matrices` is `True` then shape is `[..., M, N]`.

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Last updated November 2, 2017.

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