

## tf.IndexedSlices

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Class **IndexedSlices**

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

See the guide: [Variables > Sparse Variable Updates](#)

A sparse representation of a set of tensor slices at given indices.

This class is a simple wrapper for a pair of **Tensor** objects:

- **values**: A **Tensor** of any dtype with shape `[D0, D1, ..., Dn]`.
- **indices**: A 1-D integer **Tensor** with shape `[D0]`.

An **IndexedSlices** is typically used to represent a subset of a larger tensor **dense** of shape `[LARGE0, D1, .. , DN]` where `LARGE0 >> D0`. The values in **indices** are the indices in the first dimension of the slices that have been extracted from the larger tensor.

The dense tensor **dense** represented by an **IndexedSlices** **slices** has

```
dense[slices.indices[i], :, :, :, ...] = slices.values[i, :, :, :, ...]
```

The **IndexedSlices** class is used principally in the definition of gradients for operations that have sparse gradients (e.g. [tf.gather](#)).

Contrast this representation with [tf.SparseTensor](#), which uses multi-dimensional indices and scalar values.

## Properties

**dense\_shape**

A 1-D **Tensor** containing the shape of the corresponding dense tensor.

**device**

The name of the device on which **values** will be produced, or **None**.

**dtype**

The **DType** of elements in this tensor.

## graph

The **Graph** that contains the values, indices, and shape tensors.

## indices

A 1-D **Tensor** containing the indices of the slices.

## name

The name of this **IndexedSlices**.

## op

The **Operation** that produces **values** as an output.

## values

A **Tensor** containing the values of the slices.

## Methods

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### **`--init--`**

```
--init__(
    values,
    indices,
    dense_shape=None
)
```

Creates an **IndexedSlices**.

### **`--neg--`**

```
--neg__()
```

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