Masonry

Masonry lays out contents of varying dimensions as blocks of the same width and different height with configurable gaps.

Masonry maintains a list of content blocks with a consistent width but different height. The contents are ordered by row. If a row is already filled with the specified number of columns, the next item starts another row, and it is added to the shortest column in order to optimize the use of space.

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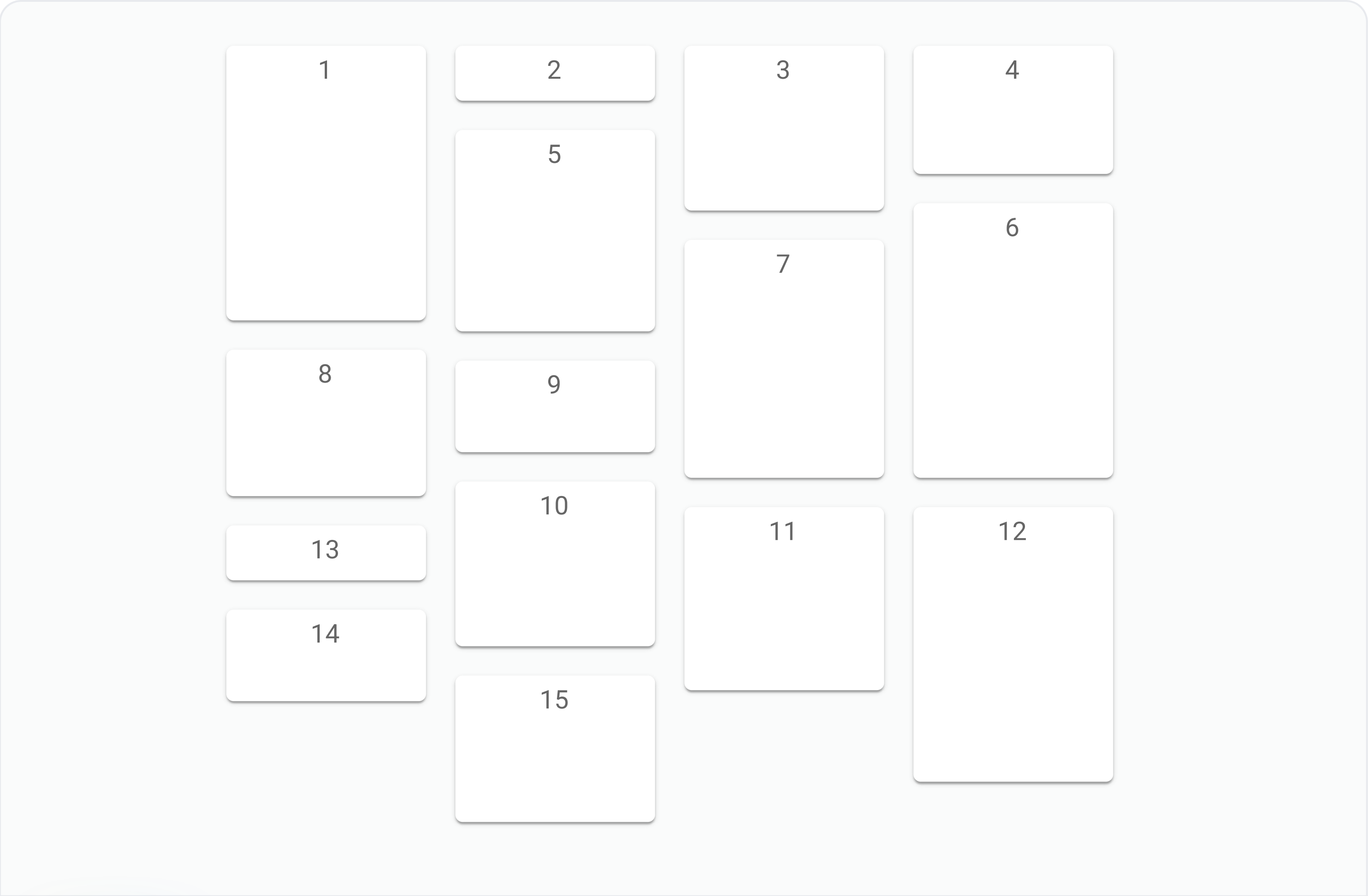
Basic masonry

A simple example of a `Masonry`. `Masonry` is a container for one or more items. It can receive any element including `<div />` and `<img />`.



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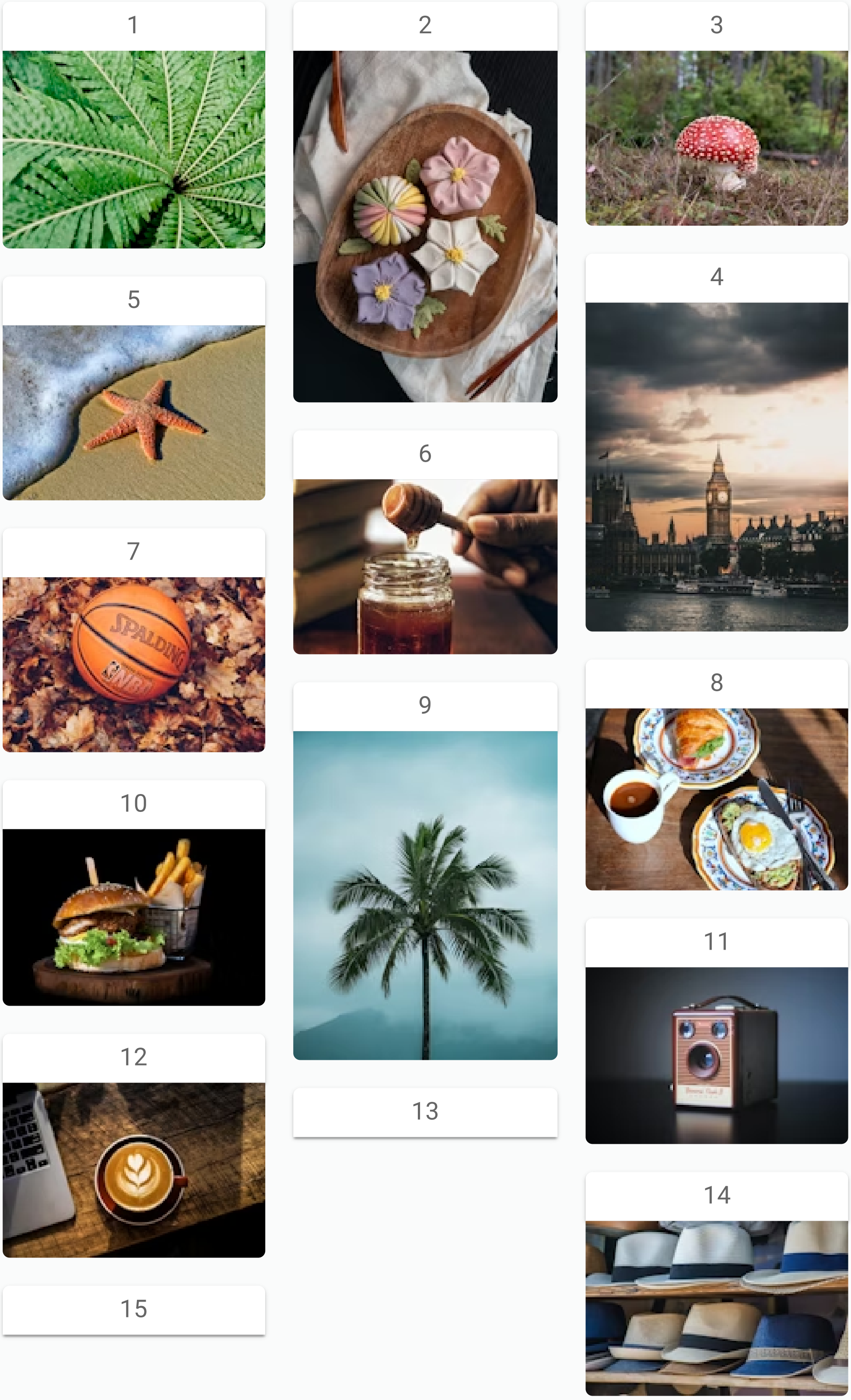
```
import Box from '@mui/material/Box';
import { styled } from '@mui/material/styles';
import Paper from '@mui/material/Paper';
import Masonry from '@mui/lab/Masonry';

const heights = [150, 30, 90, 70, 110, 150, 130, 80, 50, 90, 100, 150, 30, 50, 80];

const Item = styled(Paper)(({ theme }) => ({
  backgroundColor: '#fff',
  ...theme.typography.body2,
  padding: theme.spacing(0.5),
  textAlign: 'center',
  color: (theme.vars || theme).palette.text.secondary,
  ...theme.applyStyles('dark', {
    backgroundColor: '#1A2027',
  }),
}));

export default function BasicMasonry() {
  return (
    <Box sx={{ width: 500, minHeight: 393 }}>
      <Masonry columns={4} spacing={2}>
        {heights.map((height, index) => (
          <Item key={index} sx={{ height }}>
            {index + 1}
          </Item>
        ))}
      </Masonry>
    </Box>
  );
}
```

Image masonry

This example demonstrates the use of `Masonry` for images. `Masonry` orders its children by row. If you'd like to order images by column, check out ImageList.



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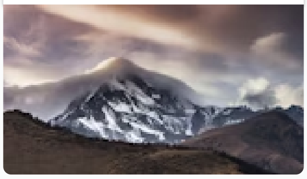

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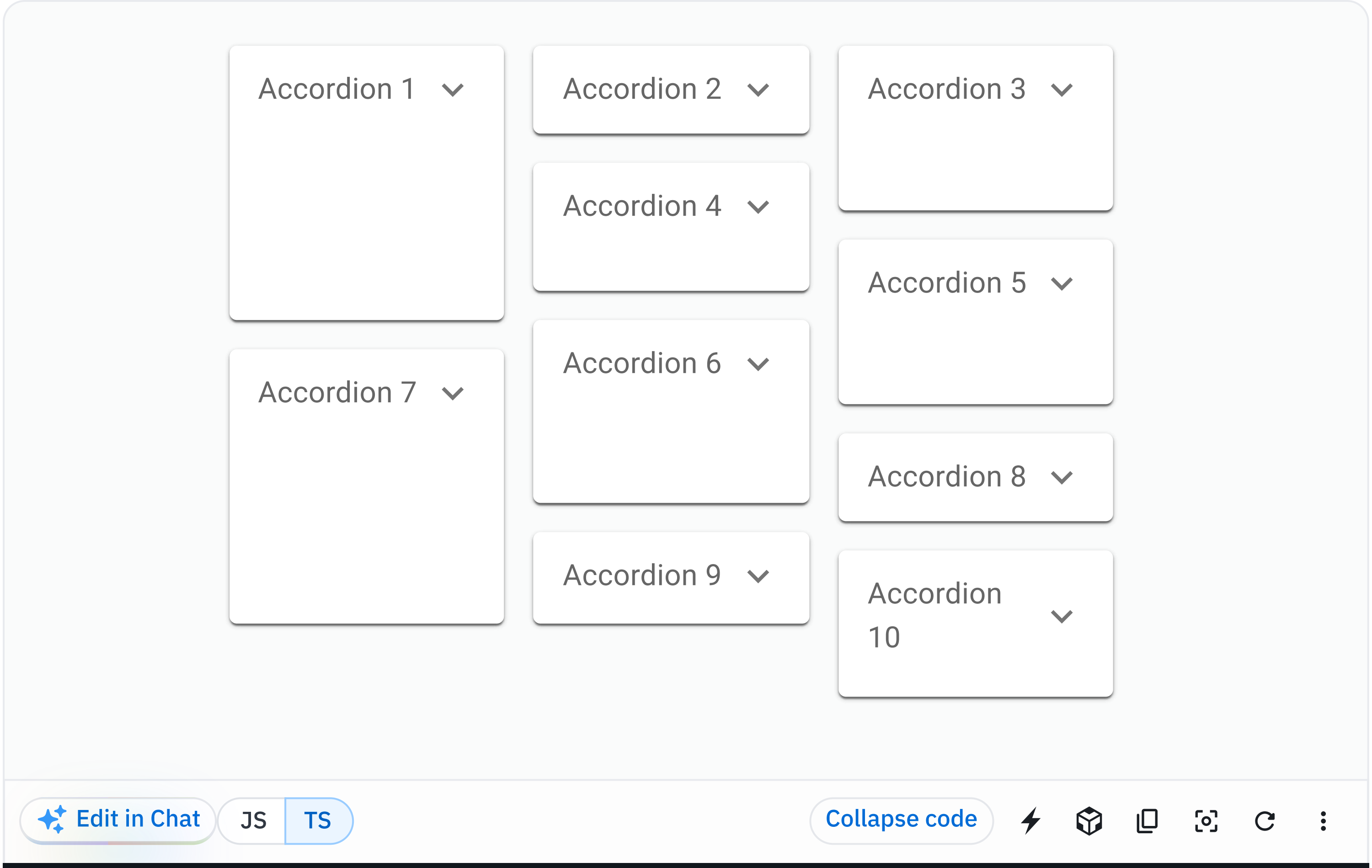
```
import Box from '@mui/material/Box';
import Paper from '@mui/material/Paper';
import Masonry from '@mui/lab/Masonry';
import { styled } from '@mui/material/styles';

const Label = styled(Paper)(({ theme }) => ({
  backgroundColor: '#fff',
  ...theme.typography.body2,
  padding: theme.spacing(0.5),
  textAlign: 'center',
  color: (theme.vars || theme).palette.text.secondary,
  borderBottomLeftRadius: 0,
  borderBottomRightRadius: 0,
  ...theme.applyStyles('dark', {
    backgroundColor: '#1A2027',
  }),
}));

export default function ImageMasonry() {
  return (
    <Box sx={{ width: 500, minHeight: 829 }}>
      <Masonry columns={3} spacing={2}>
        {itemData.map((item, index) => (
          <div key={index}>
            <Label>{index + 1}</Label>
            <img
              srcSet={`${item.img}?w=162&auto=format&dpr=2 2x`}
              src={`${item.img}?w=162&auto=format`}
              alt={item.title}
              loading="lazy"
              style={{
                borderBottomLeftRadius: 4,
                borderBottomRightRadius: 4,
                display: 'block',
                width: '100%',
              }}
            />
          </div>
```

Items with variable height

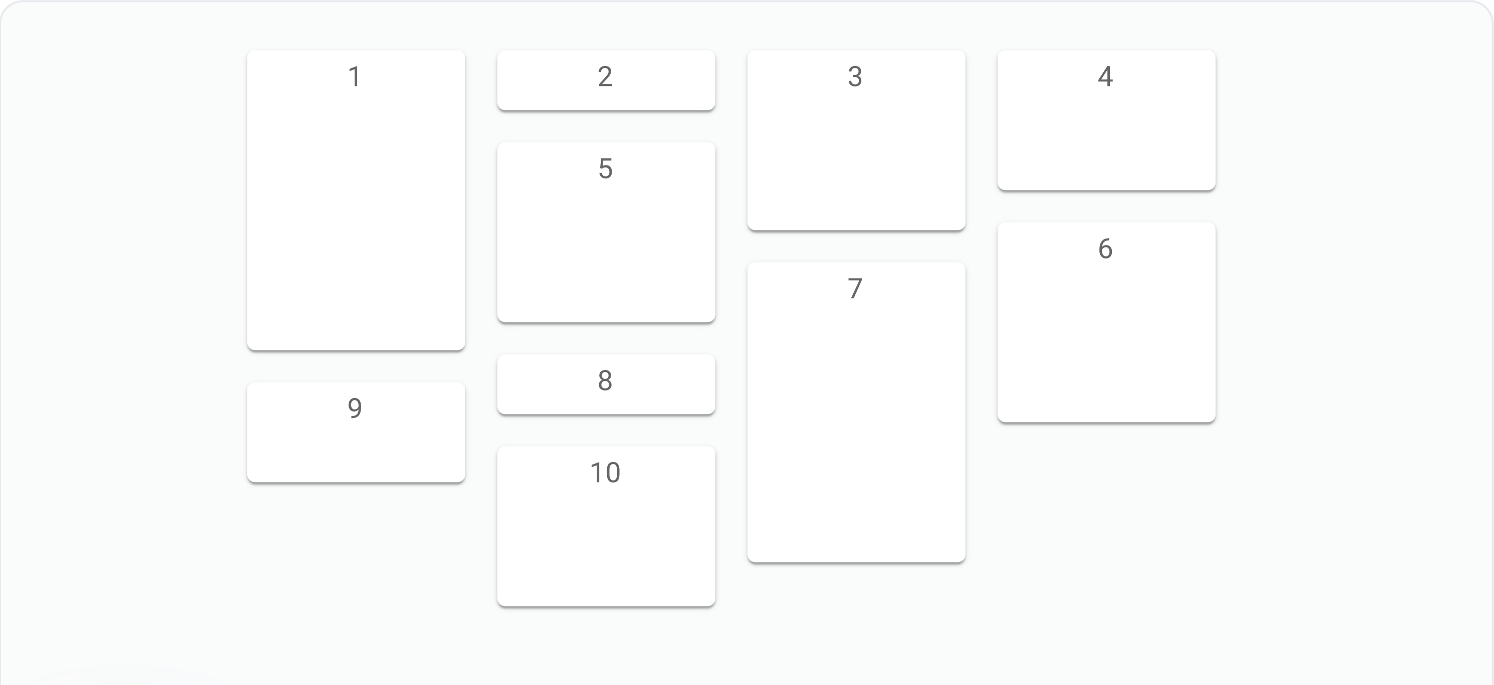
This example demonstrates the use of `Masonry` for items with variable height. Items can move to other columns in order to abide by the rule that items are always added to the shortest column and hence optimize the use of space.



```tsx
import { styled } from '@mui/material/styles';
import ExpandMoreIcon from '@mui/icons-material/ExpandMore';
import Masonry from '@mui/lab/Masonry';
import Accordion from '@mui/material/Accordion';
import AccordionDetails from '@mui/material/AccordionDetails';
import AccordionSummary from '@mui/material/AccordionSummary';
import Typography from '@mui/material/Typography';
import Box from '@mui/material/Box';
import Paper from '@mui/material/Paper';

const heights = [150, 30, 90, 70, 90, 100, 150, 30, 50, 80];

const StyledAccordion = styled(Accordion)(({ theme }) => ({
  backgroundColor: '#fff',
  color: (theme.vars || theme).palette.text.secondary,
  ...theme.applyStyles('dark', {
    backgroundColor: '#1A2027',
  }),
}));

export default function MasonryWithVariableHeightItems() {
  return (
    <Box sx={{ width: 500, minHeight: 377 }}>
      <Masonry columns={3} spacing={2}>
        {heights.map((height, index) => (
          <Paper key={index}>
            <StyledAccordion sx={{ minHeight: height }}>
              <AccordionSummary expandIcon={<ExpandMoreIcon />}>
                <Typography component="span">Accordion {index + 1}</Typography>
              </AccordionSummary>
              <AccordionDetails>Contents</AccordionDetails>
            </StyledAccordion>
          </Paper>
        ))}
      </Masonry>
    </Box>
  );
}
```

Columns

This example demonstrates the use of the `columns` to configure the number of columns of a `Masonry`.



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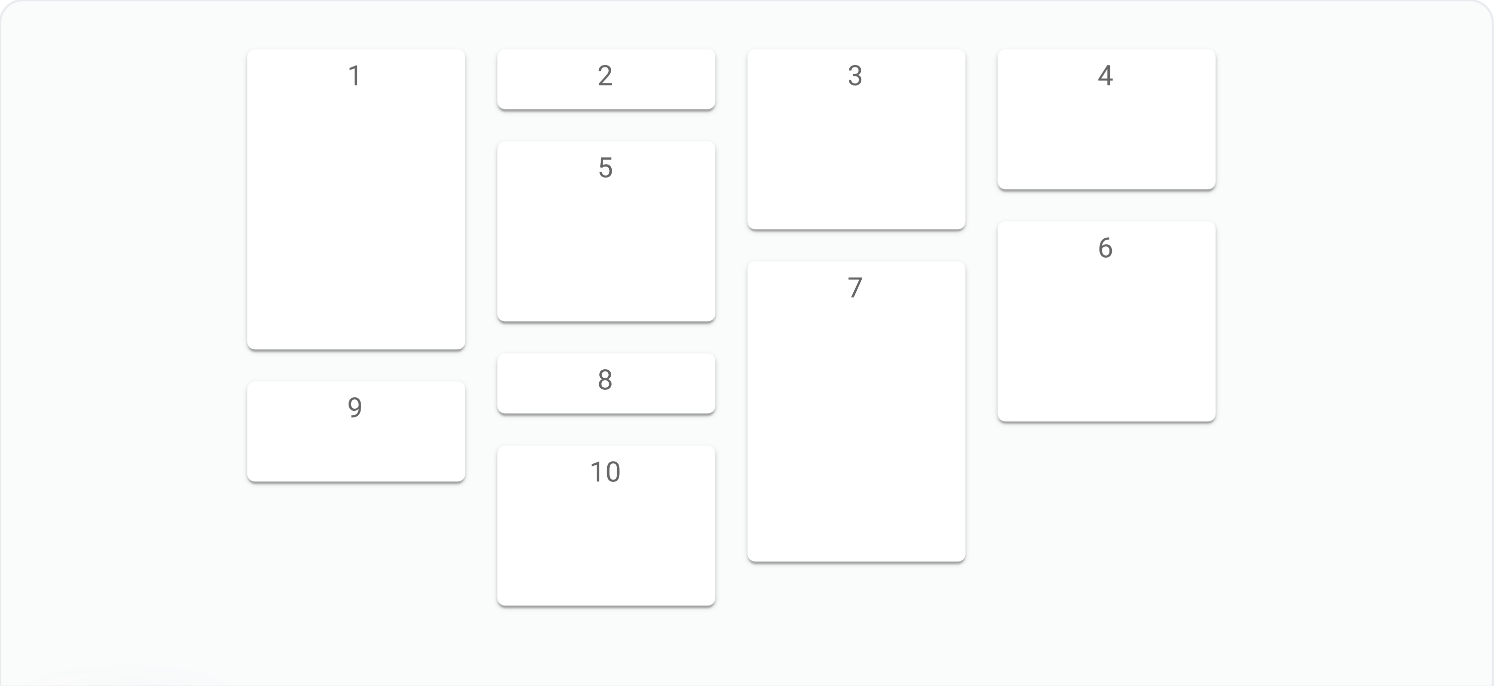
```
import Box from '@mui/material/Box';
import { styled } from '@mui/material/styles';
import Paper from '@mui/material/Paper';
import Masonry from '@mui/lab/Masonry';

const heights = [150, 30, 90, 70, 90, 100, 150, 30, 50, 80];

const Item = styled(Paper)(({ theme }) => ({
  backgroundColor: '#fff',
  ...theme.typography.body2,
  padding: theme.spacing(0.5),
  textAlign: 'center',
  color: (theme.vars || theme).palette.text.secondary,
  ...theme.applyStyles('dark', {
    backgroundColor: '#1A2027',
  }),
}));

export default function FixedColumns() {
  return (
    <Box sx={{ width: 500, minHeight: 253 }}>
      <Masonry columns={4} spacing={2}>
        {heights.map((height, index) => (
          <Item key={index} sx={{ height }}>
            {index + 1}
          </Item>
        ))}
      </Masonry>
    </Box>
  );
}
```

`columns` accepts responsive values:

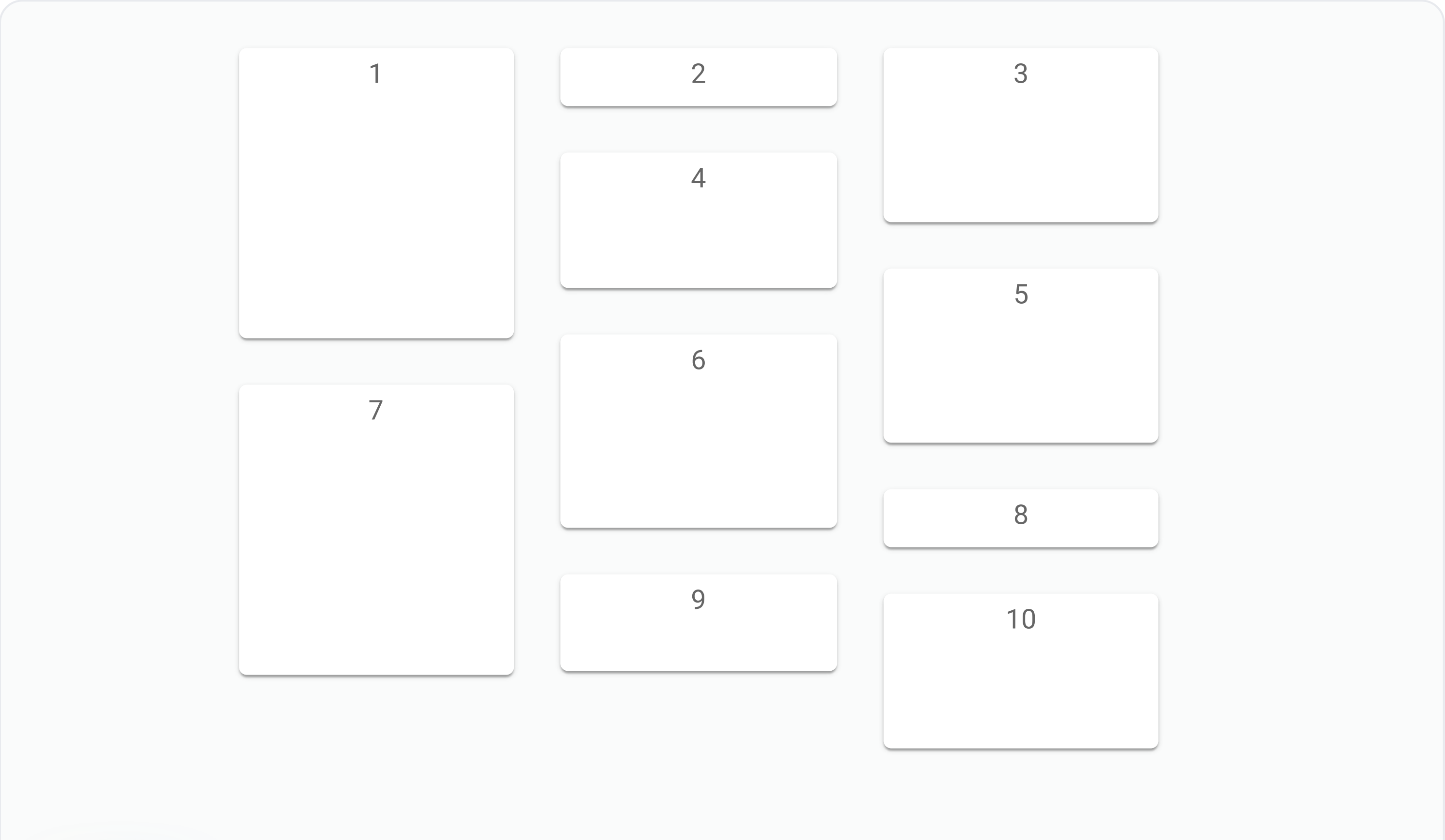


Edit in Chat JS TS Collapse code

```
import Box from '@mui/material/Box';
import { styled } from '@mui/material/styles';
import Paper from '@mui/material/Paper';
import Masonry from '@mui/lab/Masonry';

const heights = [150, 30, 90, 70, 90, 100, 150, 30, 50, 80];

const Item = styled(Paper)(({ theme }) => ({
  backgroundColor: '#fff',
  ...theme.typography.body2,
  padding: theme.spacing(0.5),
  textAlign: 'center',
    color: (theme.vars || theme).palette.text.secondary,
    ...theme.applyStyles('dark', {
      backgroundColor: '#1A2027',
    }),
  }));

export default function ResponsiveColumns() {
  return (
    <Box sx={{ width: 500, minHeight: 253 }}>
      <Masonry columns={{ xs: 3, sm: 4 }} spacing={2}>
        {heights.map((height, index) => (
          <Item key={index} sx={{ height }}>
            {index + 1}
          </Item>
        ))}
      </Masonry>
    </Box>
  );
}
```

Spacing

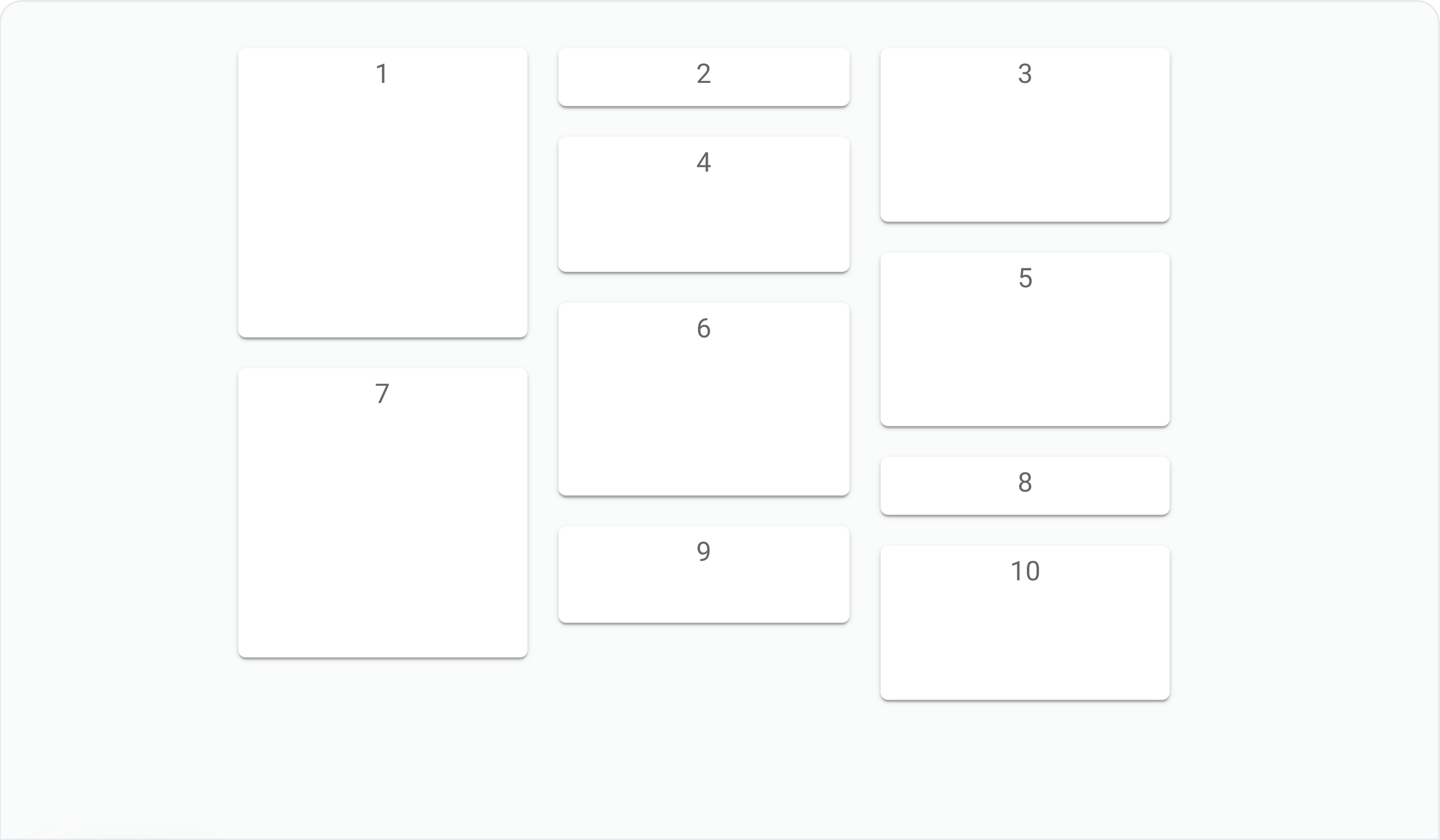
This example demonstrates the use of the `spacing` to configure the spacing between items. It is important to note that the value provided to the `spacing` prop is multiplied by the theme's spacing field.



Edit in Chat JS TS Collapse code

```
import Box from '@mui/material/Box';
import { styled } from '@mui/material/styles';
import Paper from '@mui/material/Paper';
import Masonry from '@mui/lab/Masonry';

const heights = [150, 30, 90, 70, 90, 100, 150, 30, 50, 80];

const Item = styled(Paper)(({ theme }) => ({
  backgroundColor: '#fff',
  ...theme.typography.body2,
  padding: theme.spacing(0.5),
  textAlign: 'center',
  color: (theme.vars || theme).palette.text.secondary,
  ...theme.applyStyles('dark', {
    backgroundColor: '#1A2027',
  }),
}));

export default function FixedSpacing() {
  return (
    <Box sx={{ width: 500, minHeight: 377 }}>
      <Masonry columns={3} spacing={3}>
        {heights.map((height, index) => (
          <Item key={index} sx={{ height }}>
            {index + 1}
          </Item>
        ))}
      </Masonry>
    </Box>
  );
}
```

`spacing` accepts responsive values:

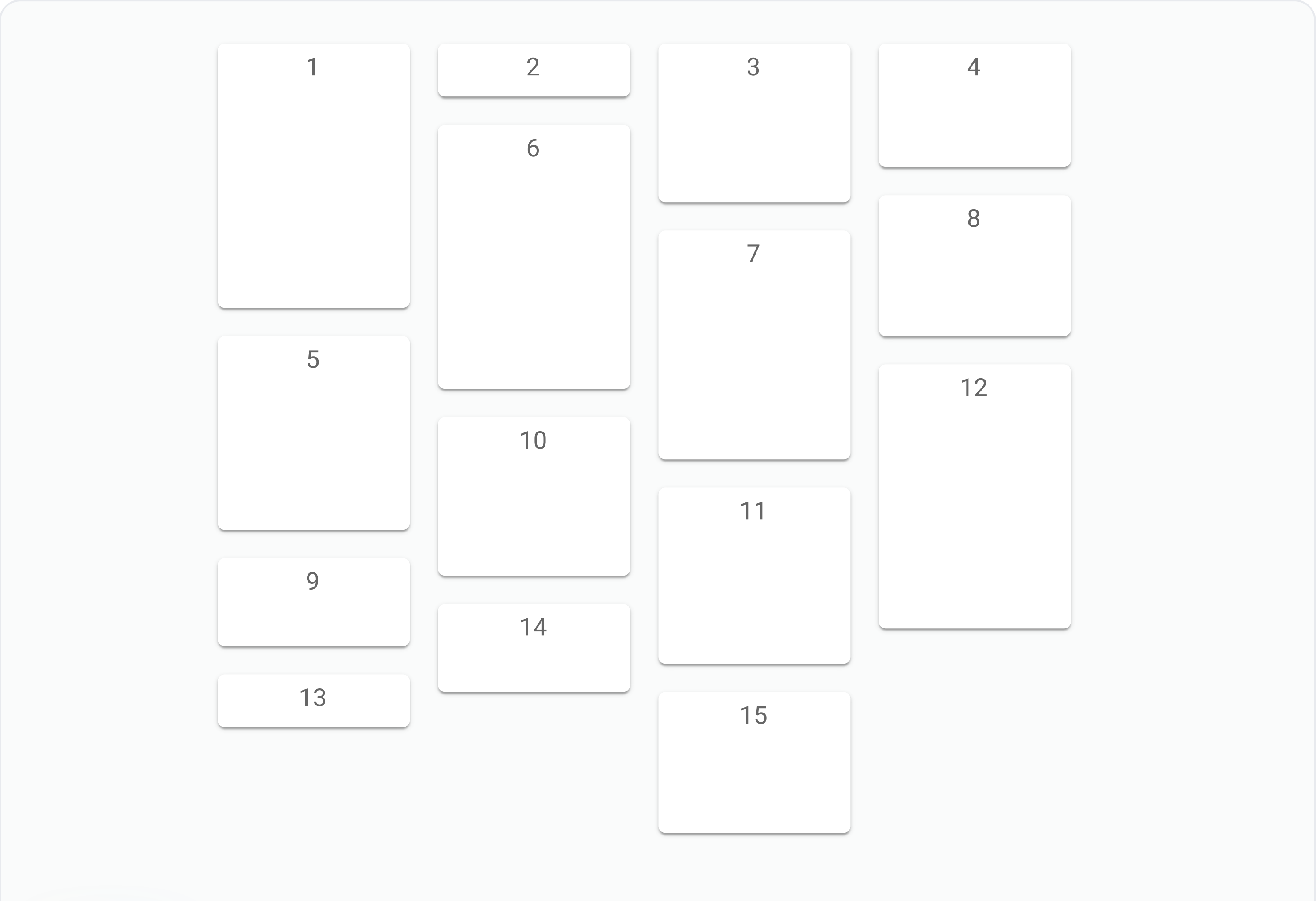


Edit in Chat JS TS Collapse code

```
import Box from '@mui/material/Box';
import { styled } from '@mui/material/styles';
import Paper from '@mui/material/Paper';
import Masonry from '@mui/lab/Masonry';

const heights = [150, 30, 90, 70, 90, 100, 150, 30, 50, 80];

const Item = styled(Paper)(({ theme }) => ({
  backgroundColor: '#fff',
  ...theme.typography.body2,
  padding: theme.spacing(0.5),
  textAlign: 'center',
  color: (theme.vars || theme).palette.text.secondary,
  ...theme.applyStyles('dark', {
    backgroundColor: '#1A2027',
  }),
}));

export default function ResponsiveSpacing() {
  return (
    <Box sx={{ width: 500, minHeight: 377 }}>
      <Masonry columns={3} spacing={{ xs: 1, sm: 2, md: 3 }}>
        {heights.map((height, index) => (
          <Item key={index} sx={{ height }}>
            {index + 1}
          </Item>
        ))}
      </Masonry>
    </Box>
  );
}
```

Sequential

This example demonstrates the use of the `sequential` to configure the sequential order. With `sequential` enabled, items are added in order from left to right rather than adding to the shortest column.



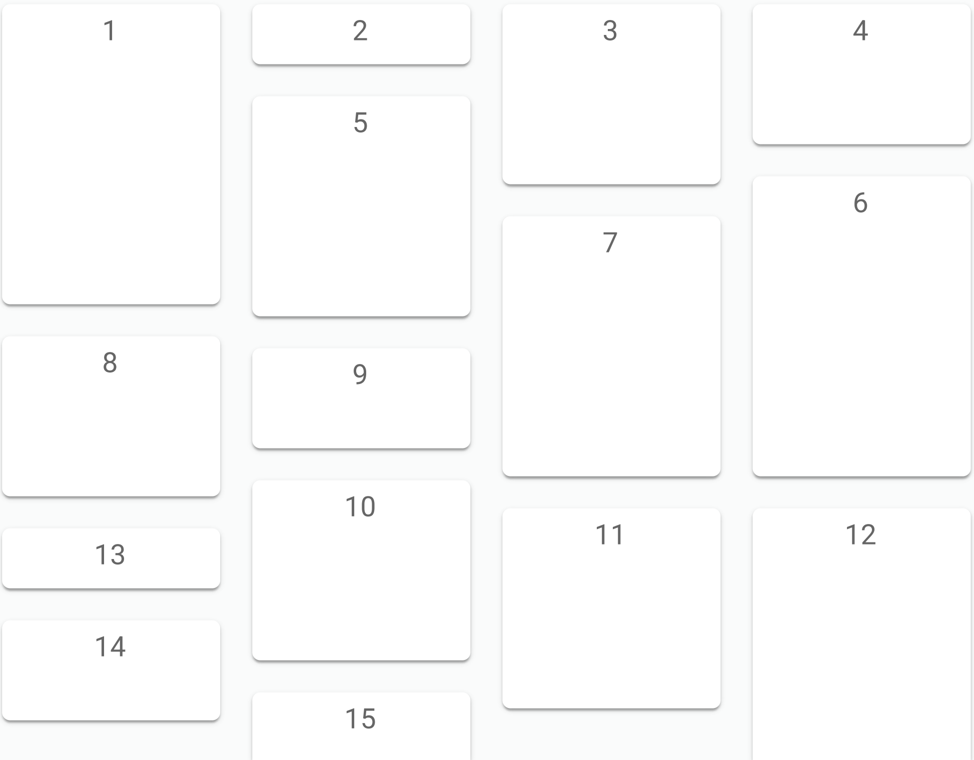
Edit in Chat JS TS Collapse code

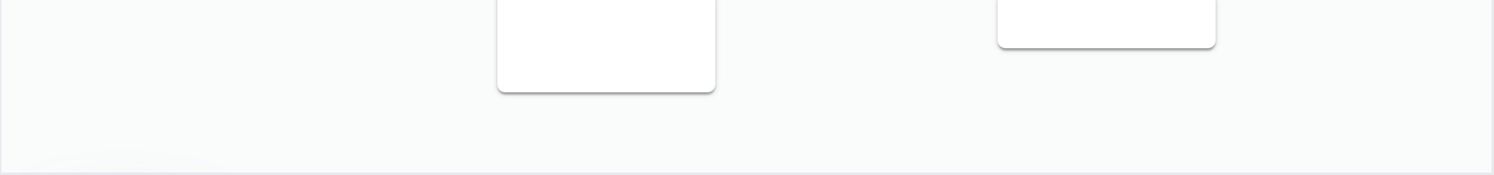
```
import Box from '@mui/material/Box';
import { styled } from '@mui/material/styles';
import Paper from '@mui/material/Paper';
import Masonry from '@mui/lab/Masonry';

const heights = [150, 30, 90, 70, 110, 150, 130, 80, 50, 90, 100, 150, 30, 50, 80];

const Item = styled(Paper)(({ theme }) => ({
  backgroundColor: '#fff',
  ...theme.typography.body2,
  padding: theme.spacing(0.5),
  textAlign: 'center',
  color: (theme.vars || theme).palette.text.secondary,
  ...theme.applyStyles('dark', {
    backgroundColor: '#1A2027',
  }),
}));

export default function Sequential() {
  return (
    <Box sx={{ width: 500, minHeight: 393 }}>
      <Masonry
        columns={4}
        spacing={2}
        defaultHeight={450}
        defaultColumns={4}
        defaultSpacing={1}
        sequential
      >
        {heights.map((height, index) => (
          <Item key={index} sx={{ height }}>
            {index + 1}
          </Item>
        ))}
      </Masonry>
    </Box>
  );
}
```

Server-side rendering

This example demonstrates the use of the `defaultHeight`, `defaultColumns` and `defaultSpacing`, which are used to support server-side rendering.

> `defaultHeight` should be large enough to render all rows. Also, it is worth mentioning that items are not added to the shortest column in case of server-side rendering.





Edit in Chat JS TS Collapse code

```tsx
import Box from '@mui/material/Box';
import { styled } from '@mui/material/styles';
import Paper from '@mui/material/Paper';
import Masonry from '@mui/lab/Masonry';

const heights = [150, 30, 90, 70, 110, 150, 130, 80, 50, 90, 100, 150, 30, 50, 80];

const Item = styled(Paper)(({ theme }) => ({
  backgroundColor: '#fff',
  ...theme.typography.body2,
  padding: theme.spacing(0.5),
  textAlign: 'center',
  color: (theme.vars || theme).palette.text.secondary,
  ...theme.applyStyles('dark', {
    backgroundColor: '#1A2027',
  }),
}));

export default function SSRMasonry() {
  return (
    <Box sx={{ width: 500, minHeight: 393 }}>
      <Masonry
        columns={4}
        spacing={2}
        defaultHeight={450}
        defaultColumns={4}
        defaultSpacing={1}
      >
        {heights.map((height, index) => (
          <Item key={index} sx={{ height }}>
            {index + 1}
          </Item>
        ))}
      </Masonry>
    </Box>
  );
}
```

API

See the documentation below for a complete reference to all of the props and classes available to the components mentioned here.

- `<Masonry />`

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