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SEMAPHORE

FOR

THREAD CONTROL

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ISSUE

- You have a printer object that multiple threads can access in your .NET application.

- You want to limit the number of threads that can access the printer at any given time, to avoid problems like paper jams and other errors

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SOLUTON

Create a Semaphore object with a specified number of "slots", which represent the maximum number of threads that can access the printer at any given time

```
new Semaphore(initialCount: 0, maximumCount: 5);
```

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BETWEEN MULTI-PROCESS

You can optionally add an unique name to your semaphore to share it to multiple process.

```
new Semaphore(initialCount: 3,
              maximumCount: 3,
              name: "PrinterApp");
```

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WAITONE METHOD

Call WaitOne() on semaphore to access to printer

```
semaphore.WaitOne();
```

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WaitOne Method

You can specify a time interval parameter, a thread can wait for a specified time period to receive a signal from the Semaphore, returning false if the time elapses without a signal.

```
semaphore.WaitOne(TimeSpan.FromSeconds(4));
```

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RELEASE

Once a thread has finished using the printer, it calls Release() on the Semaphore object to signal that it's done and to make the slot available for another thread.

```
semaphoreObject.Release();
```

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COMPLETE CODE

```
Semaphore semaphore = new Semaphore(initialCount: 3,
                                    maximumCount: 3,
                                    name: "PrinterApp");
Printer printer = new Printer();

for (int i = 0; i < 20; ++i)
{
    int j = i;
    Task.Factory.StartNew(() =>
        {
            semaphore.WaitOne();
            printer.Print(j);
            semaphore.Release();
        });
}
 Console.ReadLine();
```

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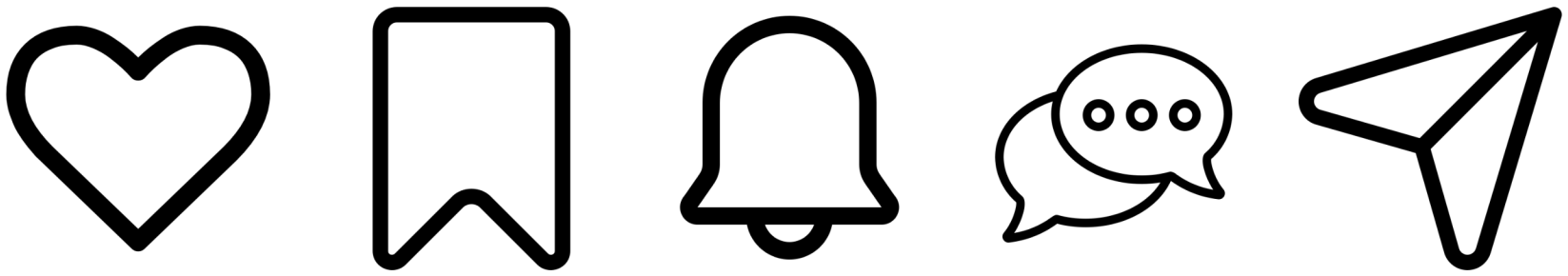

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