MuntsOS Embedded Linux

Application Note #23: C# LED Flash Example Using The .Net IoT Library

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Introduction

This application note describes how to create, build, and run a C# program to flash an LED on a target computer running ***MuntsOS Embedded Linux***, using the ***.Net*** SDK (Software Development Kit) and the ***.Net*** IoT (Internet of Things) library.

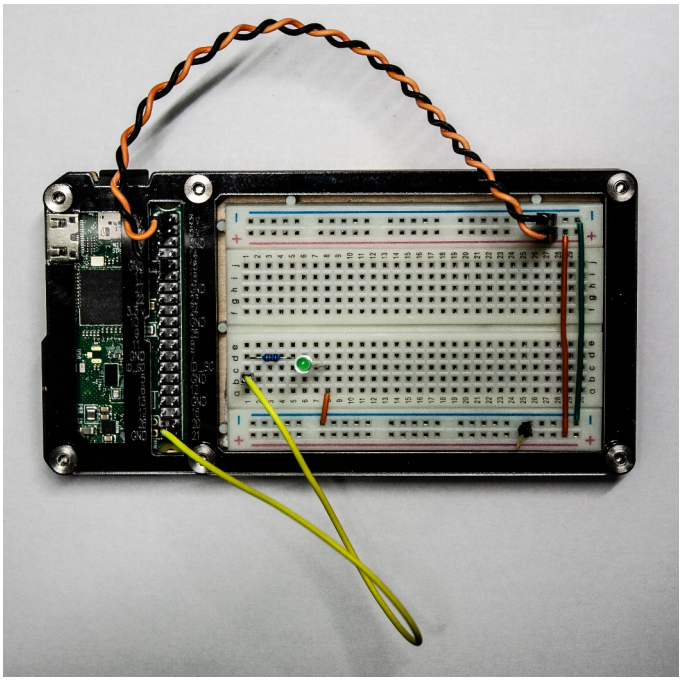
Prerequisites

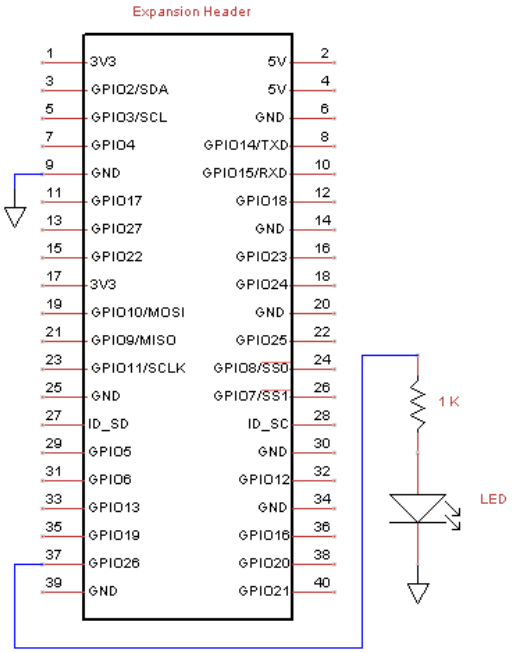
The ***.Net*** SDK must be installed on a Linux, MacOS, or Windows host system.

MuntsOS Embedded Linux must be installed on the target computer (AppNote #3).

The ***.Net*** runtime extension `dotnet-muntsos-aarch64.deb` must be installed on the target computer, by running the `sysconfig` command on the target computer. Depending on the hardware platform, the `libgpiod1-muntsos-aarch64.deb` library extension package may also be required.

Test Platform Hardware





The test platform for the purposes of this application note consists of a Raspberry Pi Zero 2 Wireless mounted in a Zebra Zero Plus Breadboard case. The orange and black jumper wires connect `+3.3V` and `GND` on the Raspberry Pi expansion header to the breadboard power rails. The yellow jumber connects `GPIO26` to a 1K ohm current limiting resistor and an LED.

Test Program Source Code

Available for download at: https://repo.munts.com/muntsos/doc/.blinky/blinkyiot.cs

```
using System.Device.Gpio;

using static System.Console;
using static System.Threading.Thread;

WriteLine("\nSystem.Device.Gpio LED Test\n");

var dev = new GpioController();

const int LED = 26;

dev.OpenPin(LED, PinMode.Output);

for (;;)
{
    dev.Write(LED, true);
    Thread.Sleep(500);
    dev.Write(LED, false);
    Thread.Sleep(500);
}
```

Exercise

This example exercise demonstrates how to create a C# program project, compile it with the ***.Net*** SDK, and run it on the test platform hardware.

Step 1: Create the **`blinky`** project:

```
mkdir blinky
cd blinky
dotnet new console
dotnet new sln
dotnet sln add blinky.csproj
dotnet add package System.Device.Gpio
wget -O Program.cs https://repo.munts.com/muntsos/doc/.blinky/blinkyiot.cs
```

Step 2: Build the **`blinky`** project, to produce a single file program:

```
dotnet publish -r linux-arm64 -p:PublishSingleFile=true --self-contained
false
```

Step 3: Copy the **`blinky`** program files to the target platform:

```
scp bin/Release/net9.0/linux-arm64/publish/blinky root@snoopy:.
```

Step 4: Run the test program on the test platform:

```
ssh root@snoopy
./blinky
```

The LED should begin flashing once a second, until you press **`CONTROL-C`**.