MuntsOS Embedded Linux

Application Note #8:
C# LED Flash Example

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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).
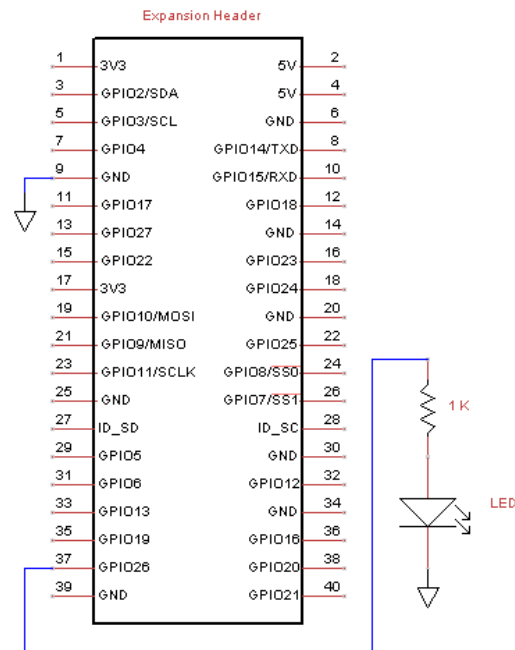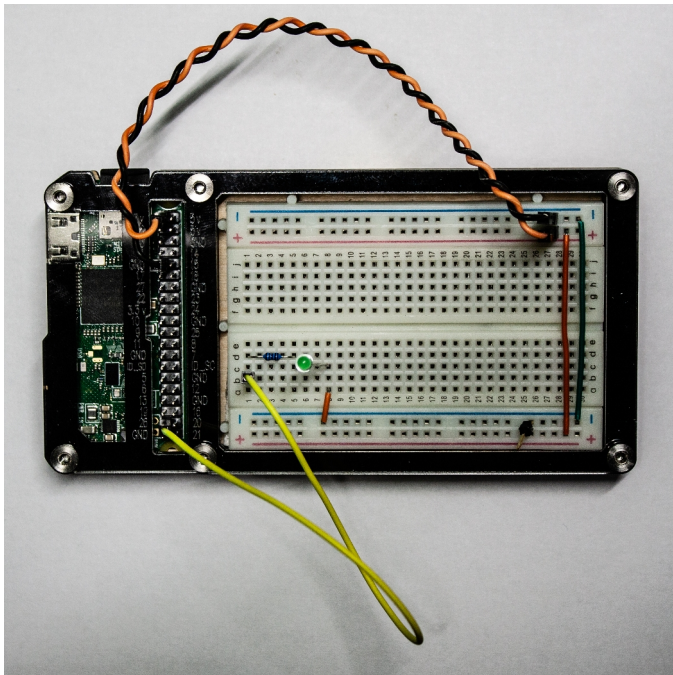
Prerequisites

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.

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/blinky.cs

```
using static System.Console;

WriteLine("\nMuntsOS C# LED Test\n");

// Configure a GPIO output to drive an LED

IO.Objects.SimpleIO.Device.Designator desg_LED =
  new IO.Objects.SimpleIO.Device.Designator(0, 26);

IO.Interfaces.GPIO.Pin LED =
  new IO.Objects.SimpleIO.GPIO.Pin(desg_LED,
    IO.Interfaces.GPIO.Direction.Output);

// Flash the LED forever (until killed)

WriteLine("Press CONTROL-C to exit.\n");

for (;;)
{
  LED.state = !LED.state;
  System.Threading.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: Install *.Net* project templates for the ***Linux Simple I/O Library***, from https://www.nuget.org :

```
dotnet new install libsimpleio-templates
```

Step 2: Create the `blinky` project:

```
dotnet new csharp_console_libsimpleio -o blinky
cd blinky
wget -O Program.cs https://repo.munts.com/muntsos/doc/.blinky/blinky.cs
```

Step 3: Build the `blinky` project:

```
dotnet publish
```

Step 4: Copy the `blinky` program files to the target platform:

```
scp bin/Release/net9.0/publish/* root@snoopy:.
```

Step 5: Run the test program on the test platform:

```
ssh root@snoopy
dotnet blinky.dll
```

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