PowerShell Scripting Homework 2:  
Create Network Utilities

# Network Toolkit

This homework is all about functions. Create a script that creates network functions to do the following tasks: given a host name ping all IP addresses for that host; given two IPv4 addresses and a subnet mask determine if the IP addresses are on the same network; given an IP address and a subnet mask return the Network ID. Create a network utility of your choice. You may limit your utilities to support IPv4.

Requirements

1. Create a script named <yourname>\_Netutils.ps1 that contains all the functions
2. Include the following author comment block

#===================================================

# Program Name : Netutils

# Author: <your name>

# I <yourname> wrote this script as original work completed by me.

# Your Network Utility: <describe your network utility here>

# Support functions: Describe your network support functions.

#===================================================

1. Function 1
   1. Description: Function takes a hostname, determines the IP address(es) for the host and pings each IP address to determine if it is online. Return output that shows results of ping.
   2. Name: Test-IPHost
   3. Parameters:
      1. –HostName (name of host to ping)
      2. -Count: Optional Number of times to ping the device
   4. Features:
      1. Provide an appropriate error if the host is not found
      2. Allow multiple hostnames to be tested
2. Function 2
   1. Description: The second function is used to determine if two IP addresses are on the same network. Return a $true it they are a $false if they are not.
   2. Name: Test-IPNetwork
   3. Parameters
      1. -IP1, -IP2: IP addresses to test
      2. –SubnetMask: Subnet mask to use in tests
   4. Features
      1. Allow subnet mask to be entered in CIDR or dotted decimal format.
      2. Validate IP address and subnet mask, return error if they are not valid.
3. Function 3
   1. Description: Given an IP address and a Subnet mask return the network ID
   2. Name: Get-IPNetID
   3. Parameters
      1. –IP: IP address to test
      2. –SubnetMask: Optional, Subnet Mask to test
   4. Features
      1. Allow subnet mask to be entered in CIDR or dotted decimal format.
      2. Validate IP address and subnet mask, return error if they are not valid.
      3. If no subnet mask is entered use the class full subnet mask based on the IP address
4. Function 4
   1. You get to make your own network utility, it can do whatever you want, have fun and be creative

## Rubric

5 points per function!

## Hints

* Use support functions for repetitive work, remember you must define functions before you call them.
* [System.Net.IPAddress]
* Resolve-DnsName
* Bitwise Logical Operators
* [BitConverter]
* [Convert]
* Don’t forget to see if there are built in PowerShell commands to leverage.