Assignment 2: Networking Topics

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# Part 1.  A conceptual understanding challenge.

Answer the following questions.  One or two sentences.

1. What is an IP address and what is it used for?

* An IP address is a string of numbers set for a device that’s connected to a certain network. It’s used to identify said device in the network, like how a street address identifies our physical dwelling place.

1. What is the difference between a local IP address and a global one?

* Local IP address can only access local network, like an internal network of a company. Global IP address can be used to access the “***Internet of things***”.

1. On the computer/internet connection that you are currently using:
   1. What is your global IP number?

* By using global IP checker site: 104.171.50.53
  1. What is your local IP number?
* By using ipconfig in cmd: 192.168.1.41

1. What is the difference between a dynamic IP and a static IP?

* Dynamic IP is assigned by the network every time the device connects to it, and will change every time. Static IP is reserved and won’t change, so you can assign it for a specific device for special treatment, like security.

1. What is port forwarding?

* It’s a technique of mapping the IP & port number from a remote device outside of the local network to connect to a specific device IN the local network.

1. What is a socket?

* Basically IP + port number = socket. It’s one end of a 2-way connection between 2 programs on the network.

1. What is the difference between a socket and a port?

* Port is one component that makes up the socket. A socket is a combination of IP and port.

1. Investigate the commonly used port numbers.  How you might select a relatively unused port number?

* Port numbers 0 to 1023 are reserved by Big Tech, so the relatively unused ones should be from 1024 to 65535.

1. What is the OSI model?

* It’s a standard of communication protocols for different systems to communicate with each other.

1. Wherein the OSI model do you suppose that us game developers will be working?

* We’ll be working on the Network Layer (3rd layer), which is responsible for transmitting data from one device to another.

1. What is TCP?

* TCP is a transport protocol used on top of IP to make sure data is transmitted reliably. Data can only be sent when the receiver is ready to receive the data

1. What is UDP?

* UDP is a lightweight data transport protocol that also works on top of IP. Data can be sent before connection is firmly established.

1. When is TCP best used?

* When reliability is crucial, such as file transferring, email, or web browsing.

1. When is UDP best used?

* When speed is crucial, such as gaming and video calls.

# Part 2.  Run a Server (like actually)

(If you are unable to access your modem, you are exempt from this assignment)

* I’m renting and have no access to the modem so I cannot complete this. However, I did use port-forwarding settings before, in another country to bypass some restriction from either Sony or my ISP that prevented my PS4 from connecting with other players. The result of this experiment was 800 hours of Monster Hunter World.

# Part 3. A super useful cantrip

Successful completion of the above parts of this assignment will get you a B.  Successful completion of the following scores you the A+.

1. Answer, what is SMTP?

* It’s short for Simple Mail Transfer Protocol, which is a standard for sending mail over the internet.

1. Write a C# program that uses SMTP to send me an email.  As an attachment, include a .txt with the code of the function that you used to send the email.  Please, be sure to \*\*\* out your email password that is in your code before sending!

using System;

using System.IO;

using System.Net.Mail;

using System.Net.Mime;

//GAME\_3110\_A2 by Trung Le (Kyle) - 101264698

namespace GAME\_3110\_A2

{

class Program

{

static void Main(string[] args)

{

try

{

// SET UP MESSAGE

MailMessage message = new MailMessage();

message.From = new MailAddress("KyleHunter.KH@outlook.com");

message.To.Add("bigboss3110@gmail.com");

message.Subject = "[GAME 3110] Trung Le's A2";

message.Body = "Dear Mr.Fernando,\n\n" +

"My name is Trung Le (Kyle) - ID#101264698. ﻿﻿﻿Attached is my submission for Assignment 2: Networking Topics.﻿﻿﻿﻿﻿﻿﻿﻿\n\n" +

"Please kindly let me know should there be any issue.\n\n" +

"Kind regards,\n\n" +

"-Kyle.";

FileStream fstream = new FileStream("C:/Users/ZBook/Google Drive/LEGAL/GBC/S5/GAME 3110\_MULTIPLAYER SYSTEMS/ASSIGN/GAME3110\_A2\_TrungLe101264698.txt", FileMode.Open, FileAccess.Read);

// Create the file attachment for this email message.

string file = "GAME3110\_A2\_TrungLe101264698.txt";

Attachment attachment = new Attachment(fstream, file);

// Add time stamp information for the file.

ContentDisposition disposition = attachment.ContentDisposition;

disposition.CreationDate = System.IO.File.GetCreationTime(file);

disposition.ModificationDate = System.IO.File.GetLastWriteTime(file);

disposition.ReadDate = System.IO.File.GetLastAccessTime(file);

// Add the file attachment to this email message.

message.Attachments.Add(attachment);

// SET UP SMTP CLIENT

SmtpClient smtp\_client = new SmtpClient("smtp-mail.outlook.com");

smtp\_client.Port = 587;

smtp\_client.Credentials = new System.Net.NetworkCredential(message.From.Address, "PasswordIsPurchasableViaLootBoxes");

smtp\_client.EnableSsl = true;

smtp\_client.Send(message);

Console.WriteLine(">>> MAIL SENT!");

}

catch (Exception ex)

{

Console.WriteLine(">>> EXRROR: {0}", ex.ToString());

}

}

}

}