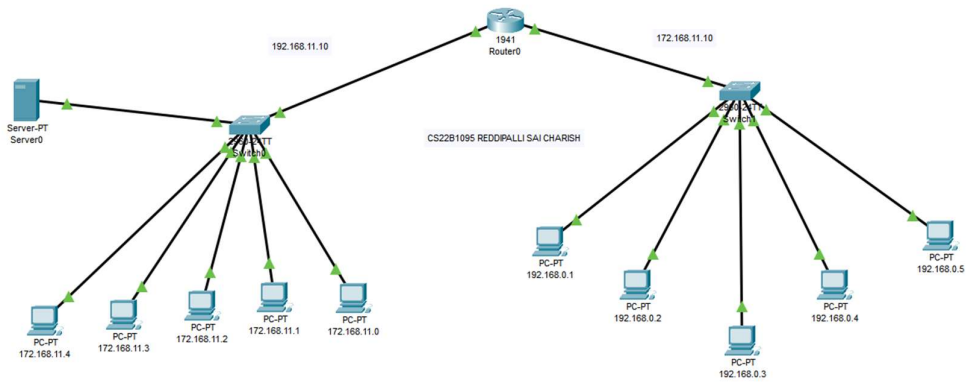
COMPUTER NETWORKS
LAB ASSIGNMENT-03

REDDIPALLI SAI CHARISH

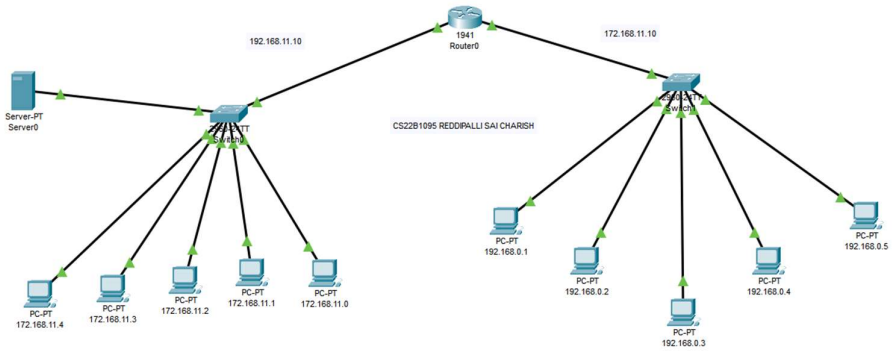
CS22B1095

QUESTION 1:

NETWORK diagram

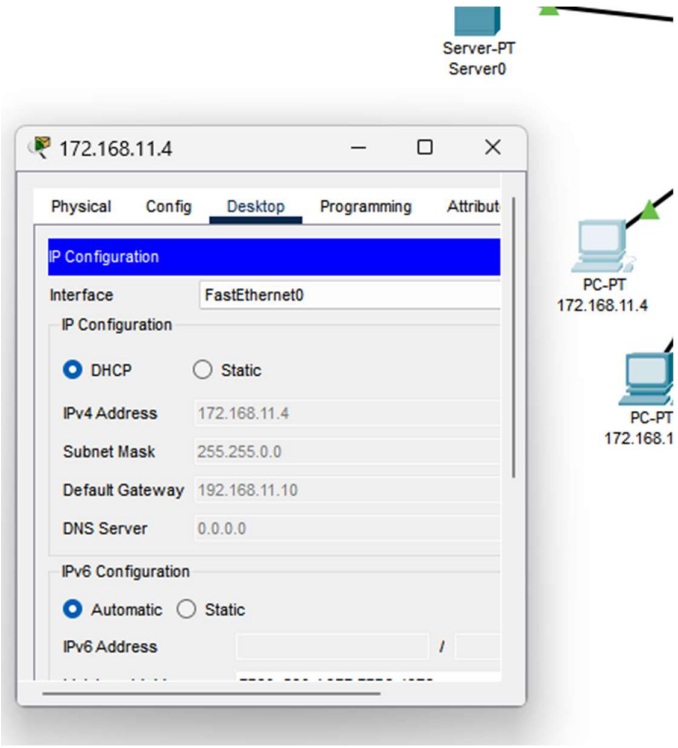


Packet transfer successful

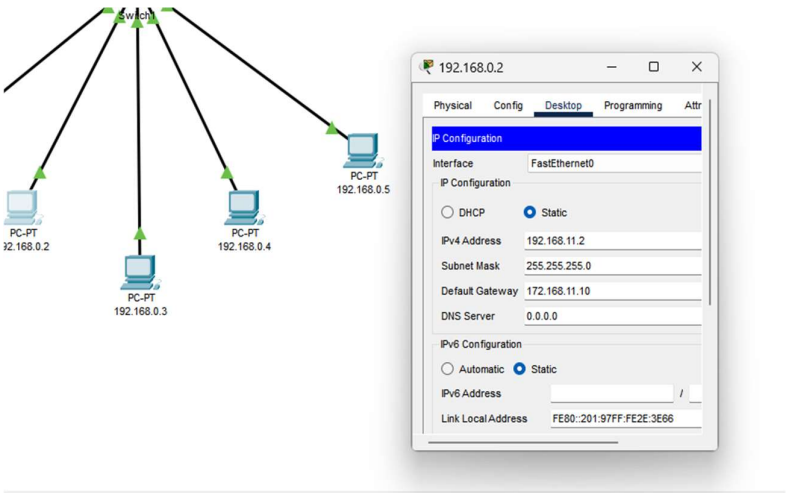


Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	172.1...	192.168.0.1	ICMP		0.000	N	0	(edit)	(delete)
	Successful	172.1...	192.168.0.3	ICMP		0.000	N	1	(edit)	(delete)
	Successful	172.1...	192.168.0.1	ICMP		0.000	N	2	(edit)	(delete)
	Successful	172.1...	192.168.0.2	ICMP		0.000	N	3	(edit)	(delete)

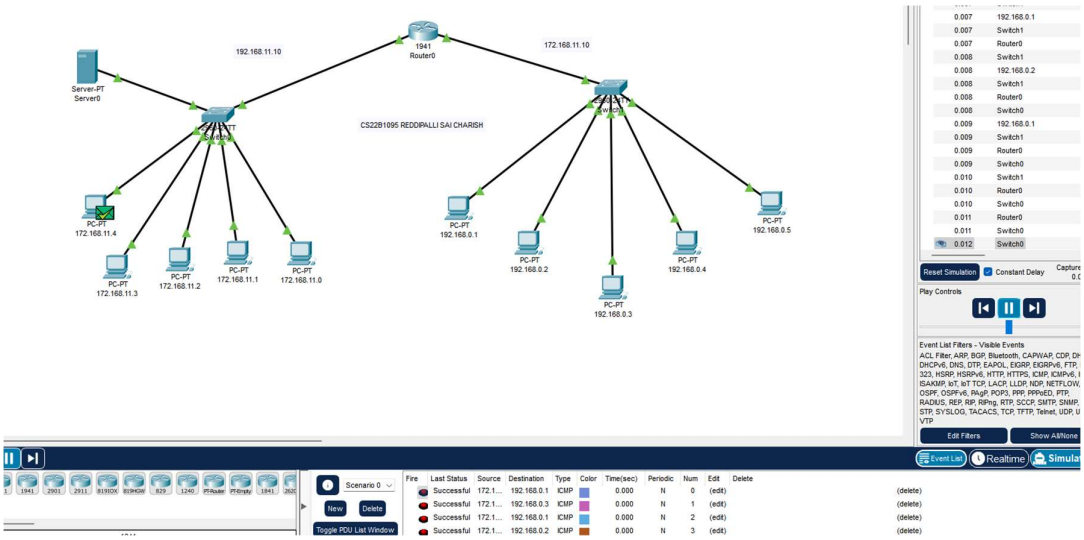
DHCP assigned IP



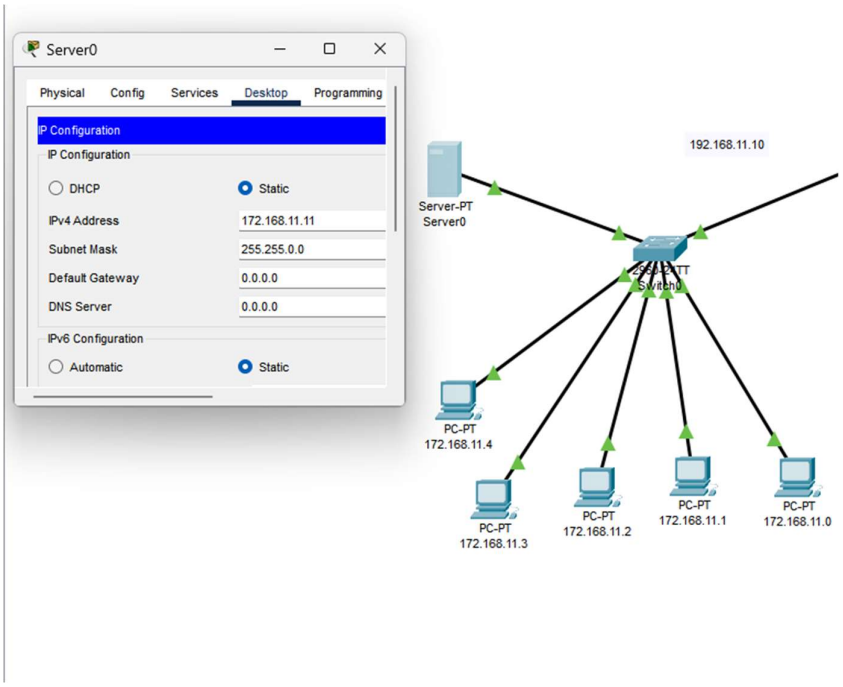
MANUAL assigned IP



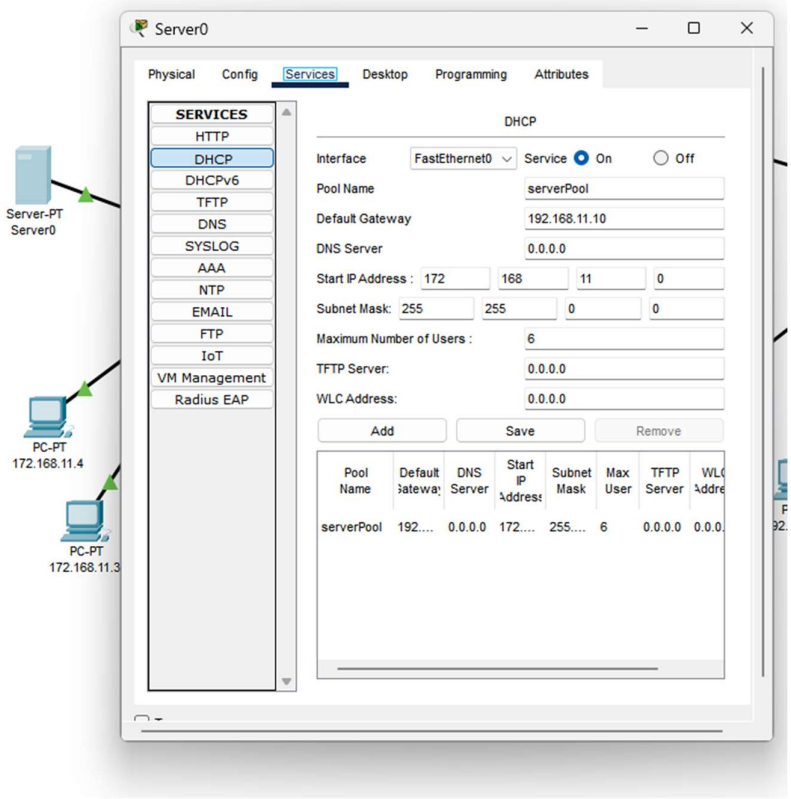
SIMULATION



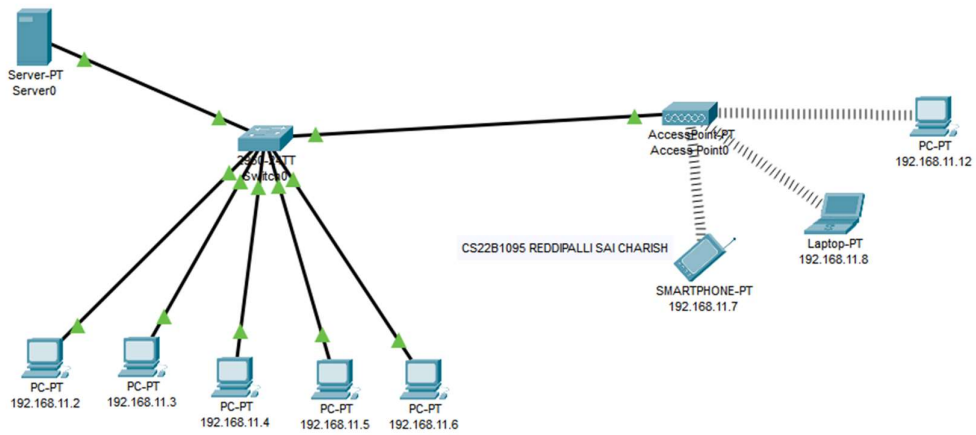
SERVER CONFIGURATION



DEFAULT GATEWAY :



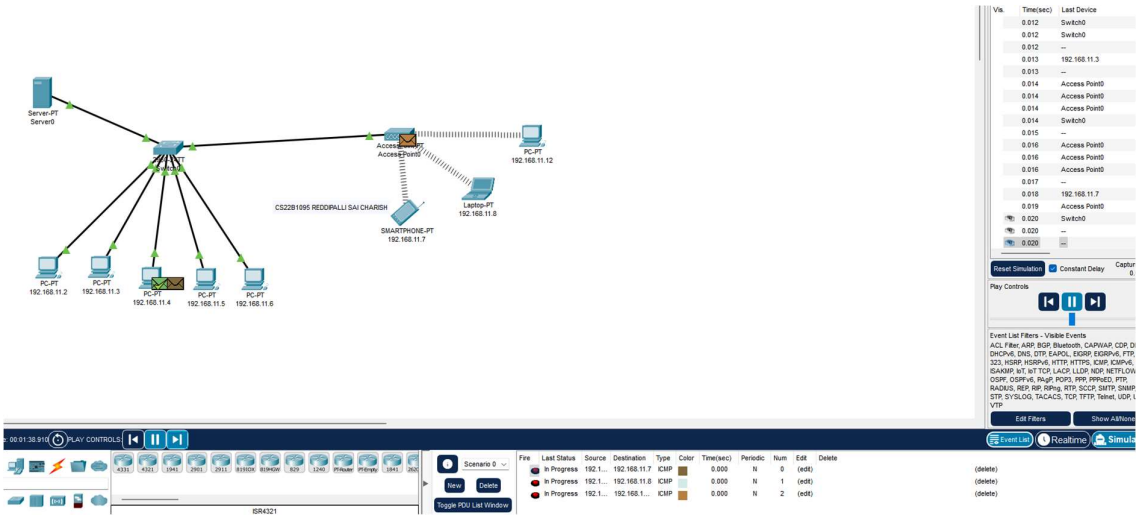
Question 2:
NETWORK DIAGRAM



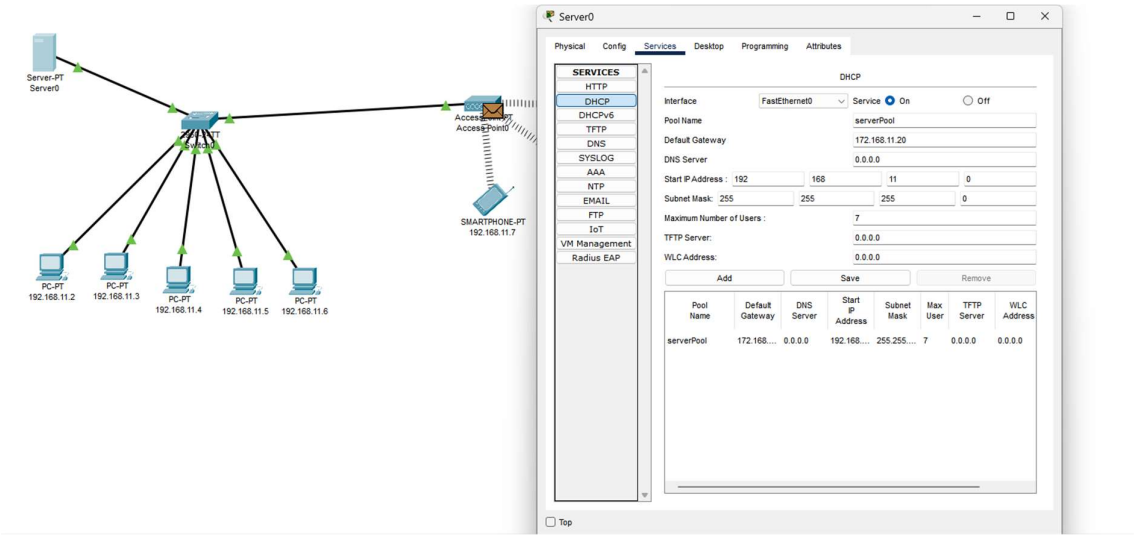
PACKET TRANSFER SUCCESSFUL

Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	192.1...	192.168.11.7	ICMP		0.000	N	0	(edit)	(delete)
	Successful	192.1...	192.168.11.8	ICMP		0.000	N	1	(edit)	(delete)
	Successful	192.1...	192.168.1...	ICMP		0.000	N	2	(edit)	(delete)

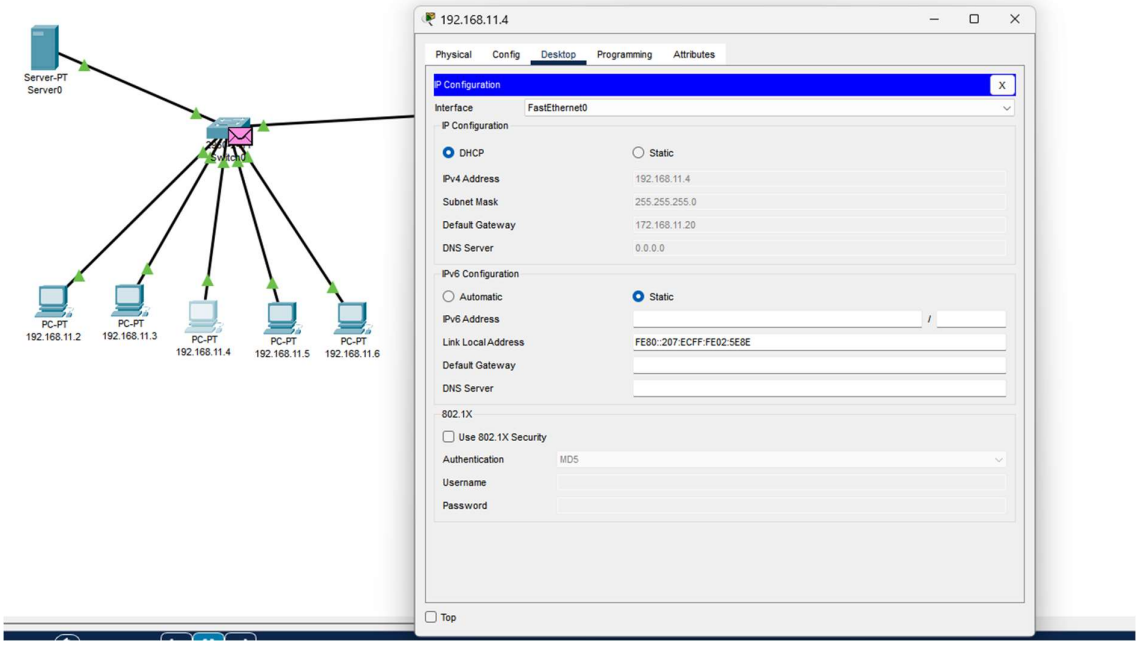
SIMULATION

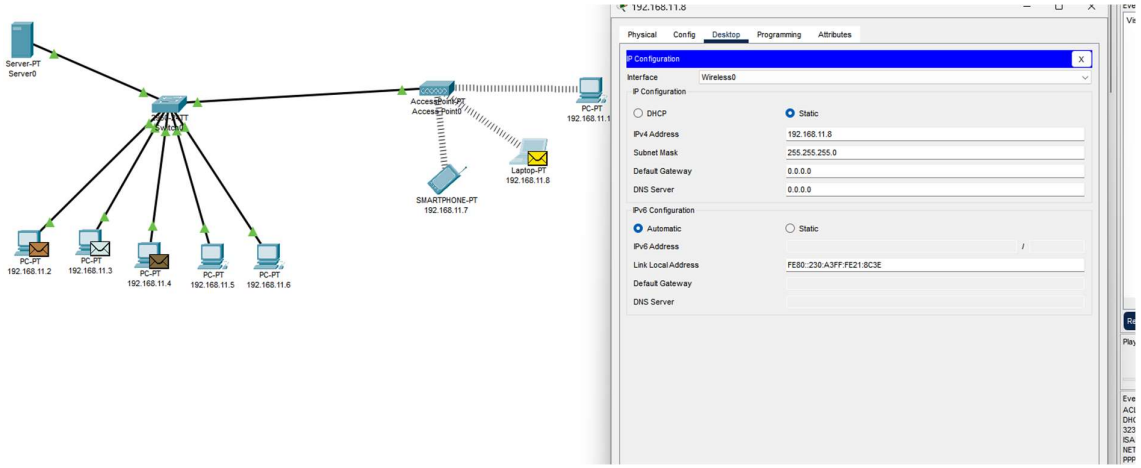


SERVER CONFIGURATION



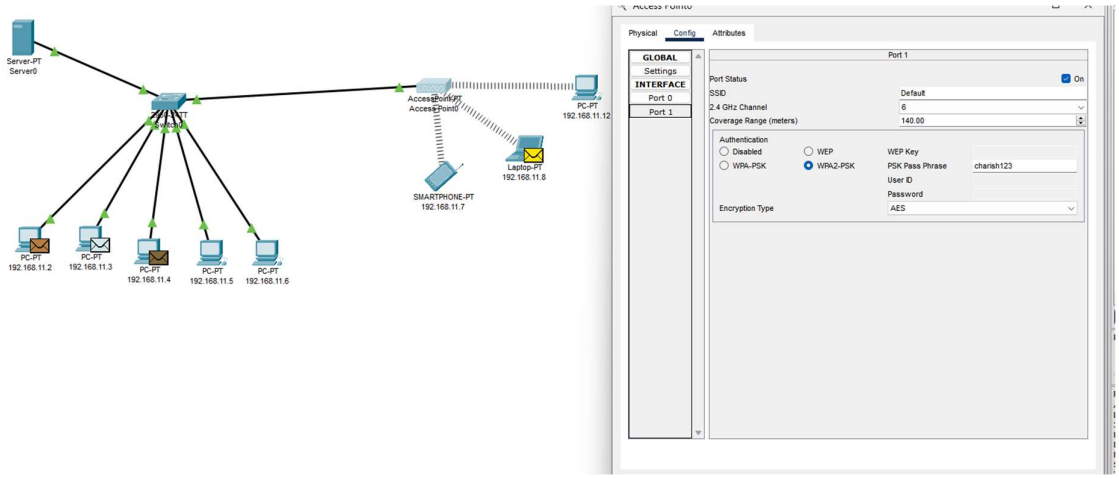
DHCP assigned IP

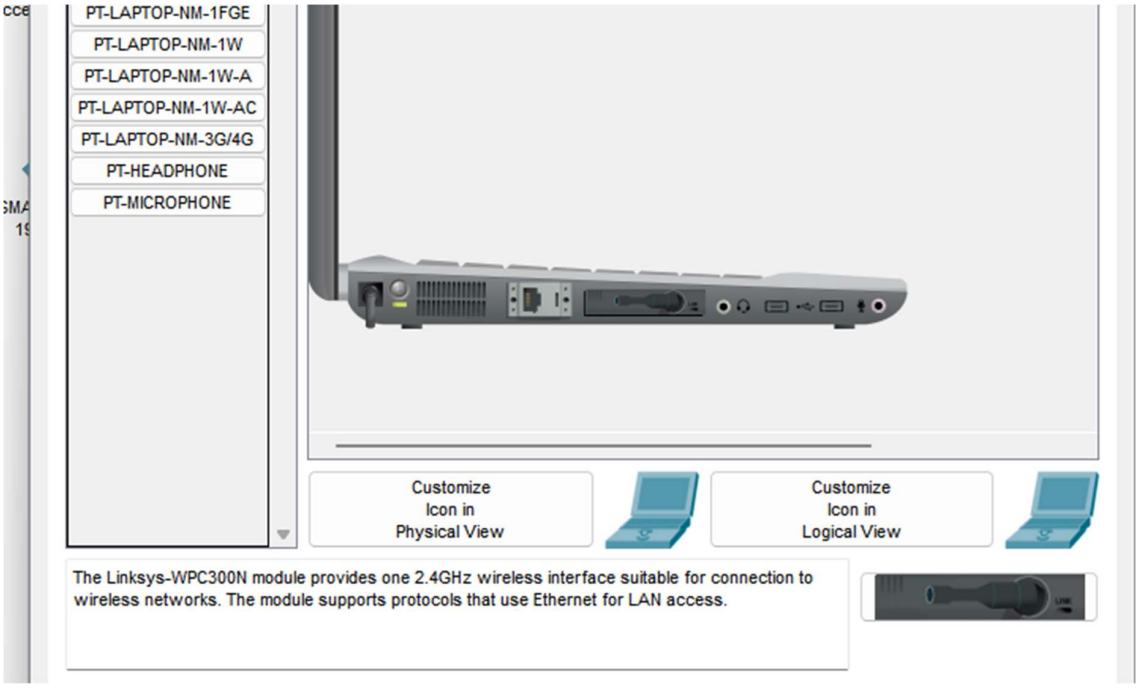


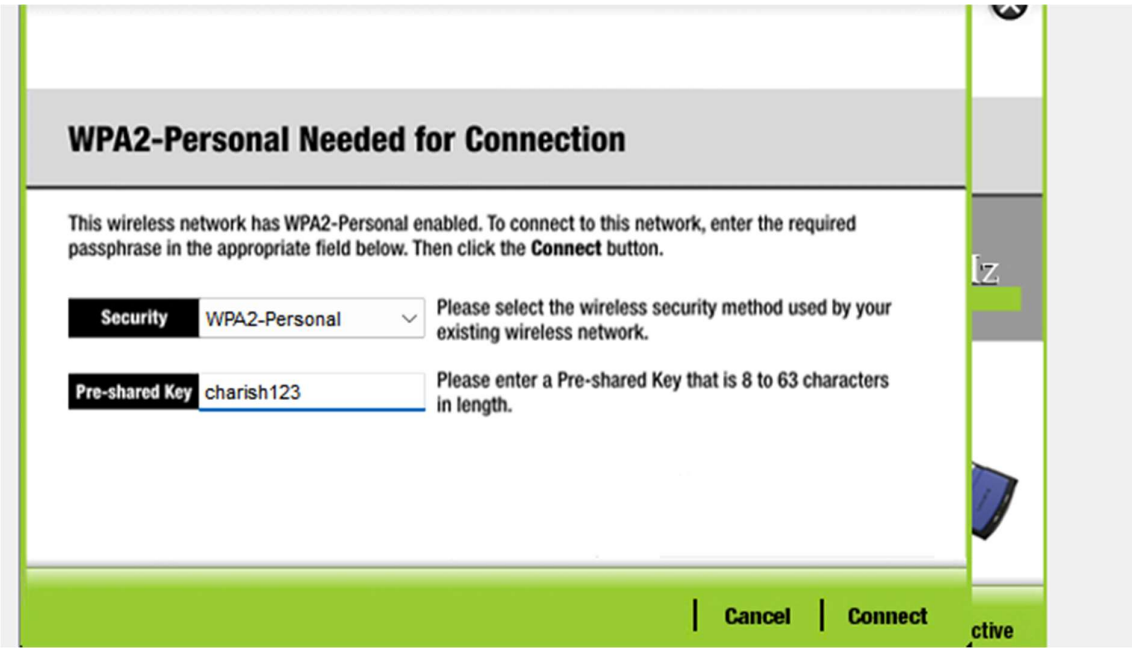


MANUAL assignment of IP to wireless devices

SETTING PASSWRODS:




PT-LAPTOP-NM-1FGE
PT-LAPTOP-NM-1W
PT-LAPTOP-NM-1W-A
PT-LAPTOP-NM-1W-AC
PT-LAPTOP-NM-3G/4G
PT-HEADPHONE
PT-MICROPHONE
Customize Icon in Physical View
Customize Icon in Logical View
The Linksys-WPC300N module provides one 2.4GHz wireless interface suitable for connection to wireless networks. The module supports protocols that use Ethernet for LAN access.


WPA2-Personal Needed for Connection
This wireless network has WPA2-Personal enabled. To connect to this network, enter the required passphrase in the appropriate field below. Then click the Connect button.
Security
WPA2-Personal
Please select the wireless security method used by your existing wireless network.
Pre-shared Key
charish123
Please enter a Pre-shared Key that is 8 to 63 characters in length.
Cancel
Connect

Question 3 :

```
//CS22B1095

//REDDIPALLI SAI CHARISH

#include <stdio.h>

#include <string.h>


void bitStuffing(char *inputMsg, char *stuffedMsg) {

   int index = 0, oneCount = 0, msgLength;

   msgLength = strlen(inputMsg);

   for (index = 0; index < msgLength; index++) {

      if (oneCount == 5) {

         strcat(stuffedMsg, "0");

         oneCount = 0;

      }

      if (inputMsg[index] == '1') {

         oneCount++;

      } else {

         oneCount = 0;

      }

      strncat(stuffedMsg, &inputMsg[index], 1);

   }

   if (oneCount == 5) {

      strcat(stuffedMsg, "0");

   }

}


void reverseBitStuffing(char *stuffedMsg, char *retrievedMsg) {

   int index = 0, oneCount = 0, msgLength;

   msgLength = strlen(stuffedMsg);

   for (index = 0; index < msgLength; index++) {

      if (oneCount == 5 && stuffedMsg[index] == '0') {

         oneCount = 0;

         continue;

      }

      if (stuffedMsg[index] == '1') {

         oneCount++;

      } else {

         oneCount = 0;
```

```
        }
        strncat(retrievedMsg, &stuffedMsg[index], 1);
    }
}

int main() {
    char inputMsg[1000], stuffedMsg[2000], retrievedMsg[1000], finalMsg[2000];

    while (1) {
        strcpy(stuffedMsg, "01111110");
        retrievedMsg[0] = '\0';
        finalMsg[0] = '\0';

        printf("Enter the message (or type 'exit' to stop): ");
        scanf("%s", inputMsg);



        if (strcmp(inputMsg, "exit") == 0) {
            break;
        }

        bitStuffing(inputMsg, stuffedMsg);
        strcat(stuffedMsg, "01111110");
        printf("Stuffed message: %s\n", stuffedMsg);

        reverseBitStuffing(stuffedMsg + 8, retrievedMsg);
        strcpy(finalMsg, "01111110");
        strcat(finalMsg, retrievedMsg);
        printf("Retrieved message: %s\n", finalMsg);
    }

    return 0;
}
```

```
Enter the message (or type 'exit' to stop): 1010100101100
Stuffed message: 01111110101010010110001111110
Retrieved message: 01111110101010010110001111110
Enter the message (or type 'exit' to stop): 1111101001
Stuffed message: 01111110111110010010111110
Retrieved message: 01111110111110100101111110
Enter the message (or type 'exit' to stop): 111110111110
Stuffed message: 01111110111110011111001111110
Retrieved message: 01111110111110111111001111110
Enter the message (or type 'exit' to stop): 1010111111
Stuffed message: 01111110101011111010111110
Retrieved message: 01111110101011111101111110
Enter the message (or type 'exit' to stop):  11111111111111111
Stuffed message: 01111110111110111110111111101101111110
Retrieved message: 01111110111111111111111111101111110
Enter the message (or type 'exit' to stop): exit
PS C:\Users\CHARISH\OneDrive\Desktop\5th sem\COMPUTER NETWORKS (CN )\output>
```

Question 4:

```
#include <stdio.h>

#include <string.h>


void addZeros(char *data, int divisorLength) {

   int length = strlen(data);

   for (int i = 0; i < divisorLength - 1; i++) {

      data[length + i] = '0';

   }

   data[length + divisorLength - 1] = '\0';

}


void performDivision(char *data, char *divisor, char *remainder) {

   int dataLen = strlen(data);

   int divisorLen = strlen(divisor);

   strcpy(remainder, data);

   for (int i = 0; i <= dataLen - divisorLen; i++) {

      if (remainder[i] == '1') {

         for (int j = 0; j < divisorLen; j++) {

            remainder[i + j] = remainder[i + j] == divisor[j] ? '0' : '1';

         }

      }

   }

}


void generateFinalMessage(char *data, char *remainder, int divisorLength) {

   int dataLen = strlen(data);

   int remainderLen = strlen(remainder);

   data[dataLen - (divisorLength - 1)] = '\0';

   strcat(data, remainder + remainderLen - (divisorLength - 1));

}


int checkError(char *remainder) {

   int remainderLen = strlen(remainder);

   for (int i = 0; i < remainderLen; i++) {

      if (remainder[i] == '1')

         return 0;
```

```
    }
    return 1;
}

int main() {
    char data[100];
    char divisor[] = "10000111";
    char crcRemainder[200];
    char receivedRemainder[200];

    while (1) {
        printf("Enter the binary data (or type 'exit' to quit): ");
        scanf("%s", data);

        if (strcmp(data, "exit") == 0) {
            break;
        }

        int divisorLength = strlen(divisor);

        addZeros(data, divisorLength);
        performDivision(data, divisor, crcRemainder);
        generateFinalMessage(data, crcRemainder, divisorLength);
        printf("Final message to be sent with CRC: %s\n", data);

        performDivision(data, divisor, receivedRemainder);
        if (checkError(receivedRemainder))
            printf("received correctly\n");
        else
            printf("error\n");
    }

    return 0;
}
```

```
Enter the binary data (or type 'exit' to quit): 11010011101100
Final message to be sent with CRC: 110100111011001111101
received correctly
Enter the binary data (or type 'exit' to quit): 10101010
Final message to be sent with CRC: 101010101000100
received correctly
Enter the binary data (or type 'exit' to quit): 1111
Final message to be sent with CRC: 11110101101
received correctly
Enter the binary data (or type 'exit' to quit): 00000000
Final message to be sent with CRC: 000000000000000
received correctly
Enter the binary data (or type 'exit' to quit): 11111111
Final message to be sent with CRC: 111111111100110
received correctly
Enter the binary data (or type 'exit' to quit):
```

Question 5:

```
#include <stdio.h>

#include <string.h>


void addZeros(char *data, int divisorLength) {

    int length = strlen(data);

    for (int i = 0; i < divisorLength - 1; i++) {

        data[length + i] = '0';

    }

    data[length + divisorLength - 1] = '\0';

}
```

```
void performDivision(char *data, char *divisor, char *remainder) {
    int dataLen = strlen(data);
    int divisorLen = strlen(divisor);
    strcpy(remainder, data);
    for (int i = 0; i <= dataLen - divisorLen; i++) {
        if (remainder[i] == '1') {
            for (int j = 0; j < divisorLen; j++) {
                remainder[i + j] = remainder[i + j] == divisor[j] ? '0' : '1';
            }
        }
    }
}

void generateFinalMessage(char *data, char *remainder, int divisorLength) {
    int dataLen = strlen(data);
    int remainderLen = strlen(remainder);
    data[dataLen - (divisorLength - 1)] = '\0';
    strcat(data, remainder + remainderLen - (divisorLength - 1));
}

int checkError(char *remainder) {
    int remainderLen = strlen(remainder);
    for (int i = 0; i < remainderLen; i++) {
        if (remainder[i] == '1')
            return 0;
    }
    return 1;
}

int main() {
    char data[100];
    char divisor[100];
    char crcRemainder[200];
    char receivedRemainder[200];
    char command[10];

    while (1) {
        printf("Enter the binary data (or type 'exit' to quit): ");
```

```
        scanf("%s", data);
        if (strcmp(data, "exit") == 0) {
            break;
        }

        printf("Enter the binary divisor: ");
        scanf("%s", divisor);

        int divisorLength = strlen(divisor);

        addZeros(data, divisorLength);
        performDivision(data, divisor, crcRemainder);
        generateFinalMessage(data, crcRemainder, divisorLength);

        printf("Final message to be sent with CRC: %s\n", data);

        performDivision(data, divisor, receivedRemainder);
        if (checkError(receivedRemainder))
            printf("received correctly\n");
        else
            printf("error\n");
    }

    return 0;
}
```

```
PS C:\Users\CHARISH\OneDrive\Desktop\5th sem\COMPUTER NETWORKS (CN )\output> & .\'5.exe'
Enter the binary data (or type 'exit' to quit): 11010011101100
Enter the binary divisor: 10011011
Final message to be sent with CRC: 110100111011000100110
received correctly
Enter the binary data (or type 'exit' to quit): 10101010
Enter the binary divisor: 10011011
Final message to be sent with CRC: 101010100111100
received correctly
Enter the binary data (or type 'exit' to quit): 1111
Enter the binary divisor: 10011011
Final message to be sent with CRC: 11110000010
received correctly
Enter the binary data (or type 'exit' to quit): 00000000
Enter the binary divisor: 10011011
Final message to be sent with CRC: 000000000000000
received correctly
Enter the binary data (or type 'exit' to quit): 11111111
Enter the binary divisor: 10011011
Final message to be sent with CRC: 111111110100010
received correctly
Enter the binary data (or type 'exit' to quit): exit
PS C:\Users\CHARISH\OneDrive\Desktop\5th sem\COMPUTER NETWORKS (CN )\output>
```