NAME

MOHAMMAD SHAAD

REGISTRATION NUMBER

21BCE1542

CLASS

COMPUTER NETWORKS

FACULTY

PUNITHA K

LAB

EXERCISE 5

Code to verify the binary bit class

```
#include <stdio.h>
#include <stdbool.h>
#include <string.h>
#include <stdlib.h>

bool isValidDecimalIPAddress(const char *ipAddress) {
    int octets[4];
    sscanf(ipAddress, "%d.%d.%d.%d", &octets[0], &octets[1], &octets[2],
&octets[3]);

    for (int i = 0; i < 4; i++) {
        if (octets[i] < 0 || octets[i] > 255) {
            return false;
        }
    }

    return true;
}

bool isValidBinaryIPAddress(const char *ipAddress) {
    if (strlen(ipAddress) != 32) {
        return false;
    }

    for (int i = 0; i < 32; i++) {
        if (ipAddress[i] != '0' && ipAddress[i] != '1') {
            return false;
        }
    }

    return true;
}

int main() {
```

```
char ipAddress[36];
printf("Enter the IP address: ");
scanf("%s", ipAddress);

bool isValidDec = isValidDecimalIPAddress(ipAddress);
bool isValidBin = isValidBinaryIPAddress(ipAddress);

if (!isValidDec && !isValidBin) {
    printf("Invalid IP address\n");
    return 0;
}

int firstOctet = 0;
if (isValidDec) {
    sscanf(ipAddress, "%d", &firstOctet);
} else if (isValidBin) {
    char octet[9];
    strncpy(octet, ipAddress, 8);
    octet[8] = '\0';

    firstOctet = strtol(octet, NULL, 2);
}

if (isValidDec) {
    if (firstOctet >= 1 && firstOctet <= 126) {
        printf("Class A (Decimal)\n");
    } else if (firstOctet >= 128 && firstOctet <= 191) {
        printf("Class B (Decimal)\n");
    } else if (firstOctet >= 192 && firstOctet <= 223) {
        printf("Class C (Decimal)\n");
    } else if (firstOctet >= 224 && firstOctet <= 239) {
        printf("Class D (Decimal)\n");
    } else if (firstOctet >= 240 && firstOctet <= 255) {
        printf("Class E (Decimal)\n");
    }
}
```

```
    if (isValidBin) {
        if (firstOctet >= 0 && firstOctet <= 127) {
            printf("Class A (Binary)\n");
        } else if (firstOctet >= 128 && firstOctet <= 191) {
            printf("Class B (Binary)\n");
        } else if (firstOctet >= 192 && firstOctet <= 223) {
            printf("Class C (Binary)\n");
        } else if (firstOctet >= 224 && firstOctet <= 239) {
            printf("Class D (Binary)\n");
        } else if (firstOctet >= 240 && firstOctet <= 255) {
            printf("Class E (Binary)\n");
        }
    }

    return 0;
}
```

OUTPUT

```
student@hostserver42:~/Desktop/Shaad$ ./a.out
Enter the IP address: 11000000101010000000010100011001
Class C (Binary)
student@hostserver42:~/Desktop/Shaad$ ./a.out
Enter the IP address: 00000000000000000000000000000000
Class A (Binary)
student@hostserver42:~/Desktop/Shaad$ ./a.out
Enter the IP address: 10000000000000000000000000000001
Class B (Binary)
```

f