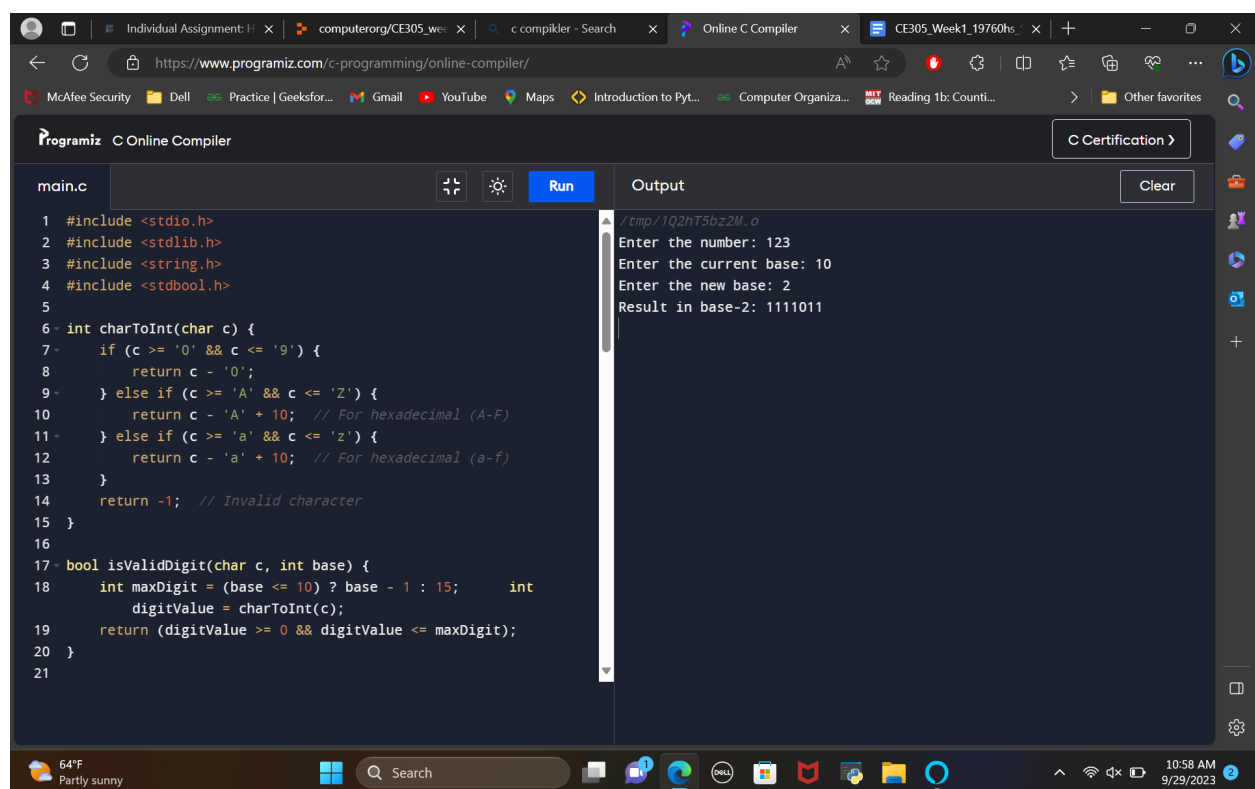


1. Write the program in any computer language to convert the given number from any base to a different base. The program needs to verify the validity of the given number first. If it is invalid, please prompt error information. Otherwise, print the correct result in the new base. For instance, as follows is the def function "base_conv" in Python



The screenshot shows a web browser window with the URL <https://www.programiz.com/c-programming/online-compiler/>. The browser has several tabs open, including "Individual Assignment: H...", "computerorg/CE305_we...", "c compikler - Search", "Online C Compiler", and "CE305_Week1_19760hs...". The browser's address bar shows the URL. The browser's toolbar includes buttons for back, forward, refresh, and search. The browser's sidebar shows a list of bookmarks, including "McAfee Security", "Dell", "Practice | Geeksfor...", "Gmail", "YouTube", "Maps", "Introduction to Pyt...", "Computer Organiza...", "Reading 1b: Counti...", and "Other favorites". The browser's status bar shows the temperature "64°F", the weather "Partly sunny", and the time "10:58 AM 9/29/2023".

The online C compiler interface shows a file named "main.c" with the following C code:

```
1 #include <stdio.h>
2 #include <stdlib.h>
3 #include <string.h>
4 #include <stdbool.h>
5
6 int charToInt(char c) {
7     if (c >= '0' && c <= '9') {
8         return c - '0';
9     } else if (c >= 'A' && c <= 'Z') {
10        return c - 'A' + 10; // For hexadecimal (A-F)
11    } else if (c >= 'a' && c <= 'z') {
12        return c - 'a' + 10; // For hexadecimal (a-f)
13    }
14    return -1; // Invalid character
15 }
16
17 bool isValidDigit(char c, int base) {
18     int maxDigit = (base <= 10) ? base - 1 : 15;    int
19     digitValue = charToInt(c);
20     return (digitValue >= 0 && digitValue <= maxDigit);
21 }
```

The output of the program is shown in the "Output" panel:

```
/tmp/1Q2hT5bz2M.o
Enter the number: 123
Enter the current base: 10
Enter the new base: 2
Result in base-2: 1111011
```

2. Write the program in any computer language to convert the floating decimal number

to 14-bits binary floating-point model as the real digital values in the hardware

memory. The example

-

26.625

10

will be saved in the 14-bits hardware memory shown

as follows

The screenshot shows a web browser window with the URL <https://www.programiz.com/c-programming/online-compiler/>. The browser's address bar and tabs are visible at the top. Below the browser, the Programiz Online Compiler interface is shown. It has a dark theme with a code editor on the left and an output window on the right. The code editor contains a C program named `main.c` that implements a function `intToBinary5Bits` to convert an integer to a 5-bit binary string. The `main` function uses this to convert the decimal value `-26.625` into a 14-bit binary floating-point format. The output window displays the resulting binary string: `11010010100000`. The Windows taskbar is visible at the bottom of the screen, showing the time as 10:57 AM on 9/29/2023.

```
main.c
1 #include <stdio.h>
2 #include <math.h>
3
4 void intToBinary5Bits(int num, char *binary) {
5     for (int i = 4; i >= 0; i--) {
6         binary[i] = '0' + (num & 1);
7         num >>= 1;
8     }
9     binary[5] = '\0';
10 }
11
12 int main() {
13     float num = -26.625;
14     char binary[14];
15
16     // Step 1: Determine the sign bit
17     int sign = (num < 0) ? 1 : 0;
18     num = fabs(num); // Make the number positive for further
19                     // calculations
20
21     // Step 2: Convert the number to binary
22     int integerPart = (int)num;
```

Output

```
/tmp/1Q2hT5bz2M.o
11010010100000
```