```c
#include <stdio.h>
#include <stdlib.h>

int main()
{

    int op,base;
    char digit2;//binary(base2) inputs entered by user in option1
    int digit10;// decimal(base10) inputs entered by user in option1

    int D7=0,D6=0,D5=0,D4=0,D3=0,D2=0,D1=0,D0=0;//inputs
    int Y2=0,Y1=0,Y0=0;//outputs

    do{
        fflush(stdin);//menu
        printf("Welcome to Octal-to-Binary Encoder!\n\n");
        printf("(1) Compute and Display the outputs\n");
        printf("(2)Quit\n");
        printf("You choose: ");
        scanf("%d",&op);
        while(op!=1 && op!=2){
            fflush(stdin);
            printf("Please enter option either 1 or 2: ");
            scanf("%d",&op);
        }

        if(op==1){
            fflush(stdin);
            printf("You have chosen option 1\n\n");
            printf("Which base will you use to enter input (base 2 or base 10)? ");
            scanf("%d",&base);
            while(base!=2 && base!=10){
                fflush(stdin);
                printf("Please enter base either 2 or 10: ");
                scanf("%d",&base);
            }

            if(base==2){
                int digitCount=0;//digit counter of the text entered by user
                int error=0;
                int asciiValue;

                //printf("Please enter your input: ");

                while(!error){
                    printf("Please enter your input: ");
                    fflush(stdin);
                    do{
                        scanf("%c",&digit2);
                        asciiValue=digit2;
                        if(asciiValue!=48 && asciiValue!=49 && asciiValue!=10){//If entered value is not
either a 0 or 1, error=1
                          printf("Please enter either 0 or 1!\n");
                          error=1;
                          break;
                        }
                        if(asciiValue!=10){//based on the digitCount, I assigned every input value with the
input entered by user one by one.
                           digitCount++;

                           if(digitCount%8==1){
                               D7=digit2-48;
                           }
                           else if(digitCount%8==2){
                               D6=digit2-48;
                           }
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                            else if(digitCount%8==3){
                                D5=digit2-48;
                            }
                            else if(digitCount%8==4){
                                D4=digit2-48;
                            }
                            else if(digitCount%8==5){
                                D3=digit2-48;
                            }
                            else if(digitCount%8==6){
                                D2=digit2-48;
                            }
                            else if(digitCount%8==7){
                                D1=digit2-48;
                            }
                            else if(digitCount%8==0){//when we are at last step(D0), I assigned every D
value. So now, I can assign output values based on input(Ds) values
                                D0=digit2-48;
                                if(D4||D5||D6||D7){
                                    Y2=1;
                                }
                                else{
                                    Y2=0;
                                }
                                if(D2||D3||D6||D7){
                                    Y1=1;
                                }
                                else{
                                    Y1=0;
                                }
                                if(D1||D3||D5||D7){
                                    Y0=1;
                                }
                                else{
                                    Y0=0;
                                }
                            }
                        }



                    }while(digit2!=10);

                    if(error){
                        error=0;
                        digitCount=0;
                        continue;
                    }
                    else{//length errors
                        if(digitCount<8){

                            printf("You have entered less than 8 bits! Please try again!\n");
                            digitCount=0;
                        }
                        else if(digitCount>8){

                            printf("You have entered more than 8 bits! Please try again!\n");
                            digitCount=0;
                        }
                        else{

                            error=1;
                        }
                    }
                }

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130
131                 printf("Y2 is %d  Y1 is %d  Y0 is %d\n\n",Y2,Y1,Y0);
132
133             }
134
135             else{//base==10
136
137
138
139                 printf("Please enter your input: ");
140                 fflush(stdin);
141                 scanf("%d",&digit10);
142                 while(digit10>255 || digit10<0){//make sure not to enter a negative value.
143                     fflush(stdin);
144                     printf("Decimal %d cannot be represented with 8 bits. Please try again!\n",digit10);
145                     printf("Please enter your input: ");
146                     scanf("%d",&digit10);
147                 }
148                 int rem;//this variable is the remainder when we take modulus 2 of the number
149                 int tempNumber=digit10;
150                 int binaryNumber=0;// this is our final conversion result
151                 int mult=1;//this is for multiplier
152                 int count=0;//this is the count of binary number elements
153
154                 while(tempNumber>0){//calculating the binary equavalent of the decimal value entered by
user
155                     rem=tempNumber%2;
156                     binaryNumber=binaryNumber+(rem*mult);
157                     mult*=10;
158                     tempNumber/=2;
159                     count++;
160
161                 }
162
163                 if(count==8){//assigning every bit of the binary value to inputs(Ds)
164                     D0=binaryNumber%10;
165                     binaryNumber/=10;
166                     D1=binaryNumber%10;
167                     binaryNumber/=10;
168                     D2=binaryNumber%10;
169                     binaryNumber/=10;
170                     D3=binaryNumber%10;
171                     binaryNumber/=10;
172                     D4=binaryNumber%10;
173                     binaryNumber/=10;
174                     D5=binaryNumber%10;
175                     binaryNumber/=10;
176                     D6=binaryNumber%10;
177                     binaryNumber/=10;
178                     D7=binaryNumber%10;
179                     binaryNumber/=10;
180                 }
181                 else if(count==7){
182                     D0=binaryNumber%10;
183                     binaryNumber/=10;
184                     D1=binaryNumber%10;
185                     binaryNumber/=10;
186                     D2=binaryNumber%10;
187                     binaryNumber/=10;
188                     D3=binaryNumber%10;
189                     binaryNumber/=10;
190                     D4=binaryNumber%10;
191                     binaryNumber/=10;
192                     D5=binaryNumber%10;
193                     binaryNumber/=10;
194                     D6=binaryNumber%10;
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195                     binaryNumber/=10;
196                     D7=0;
197                 }
198                 else if(count==6){
199                     D0=binaryNumber%10;
200                     binaryNumber/=10;
201                     D1=binaryNumber%10;
202                     binaryNumber/=10;
203                     D2=binaryNumber%10;
204                     binaryNumber/=10;
205                     D3=binaryNumber%10;
206                     binaryNumber/=10;
207                     D4=binaryNumber%10;
208                     binaryNumber/=10;
209                     D5=binaryNumber%10;
210                     binaryNumber/=10;
211                     D6=0;
212                     D7=0;
213                 }
214                 else if(count==5){
215                     D0=binaryNumber%10;
216                     binaryNumber/=10;
217                     D1=binaryNumber%10;
218                     binaryNumber/=10;
219                     D2=binaryNumber%10;
220                     binaryNumber/=10;
221                     D3=binaryNumber%10;
222                     binaryNumber/=10;
223                     D4=binaryNumber%10;
224                     binaryNumber/=10;
225                     D5=0;
226                     D6=0;
227                     D7=0;
228                 }
229                 else if(count==4){
230                     D0=binaryNumber%10;
231                     binaryNumber/=10;
232                     D1=binaryNumber%10;
233                     binaryNumber/=10;
234                     D2=binaryNumber%10;
235                     binaryNumber/=10;
236                     D3=binaryNumber%10;
237                     binaryNumber/=10;
238                     D4=0;
239                     D5=0;
240                     D6=0;
241                     D7=0;
242                 }
243                 else if(count==3){
244                     D0=binaryNumber%10;
245                     binaryNumber/=10;
246                     D1=binaryNumber%10;
247                     binaryNumber/=10;
248                     D2=binaryNumber%10;
249                     binaryNumber/=10;
250                     D3=0;
251                     D4=0;
252                     D5=0;
253                     D6=0;
254                     D7=0;
255                 }
256                 else if(count==2){
257                     D0=binaryNumber%10;
258                     binaryNumber/=10;
259                     D1=binaryNumber%10;
260                     binaryNumber/=10;
```

```
                    D2=0;
                    D3=0;
                    D4=0;
                    D5=0;
                    D6=0;
                    D7=0;
                }
                else if(count==1){
                    D0=binaryNumber%10;
                    binaryNumber/=10;
                    D1=0;
                    D2=0;
                    D3=0;
                    D4=0;
                    D5=0;
                    D6=0;
                    D7=0;
                }
                else{
                    D0=0;
                    D1=0;
                    D2=0;
                    D3=0;
                    D4=0;
                    D5=0;
                    D6=0;
                    D7=0;
                }
                //after assiging Ds, I found the outputs(Ys)
                if(D4||D5||D6||D7){
                    Y2=1;
                }
                else{
                    Y2=0;
                }
                if(D2||D3||D6||D7){
                    Y1=1;
                }
                else{
                    Y1=0;
                }
                if(D1||D3||D5||D7){
                    Y0=1;
                }
                else{
                    Y0=0;
                }
                printf("Y2 is %d  Y1 is %d  Y0 is %d\n\n",Y2,Y1,Y0);



            }

        }


        else{
            printf("You have chosen option 2\n");
            printf("BYEE!!");
        }


    }while(op!=2);
```

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328
329
330
331
332     return 0;
333 }
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