

Universidad Autónoma de Baja California  
Facultad de Ingeniería, Arquitectura y Diseño



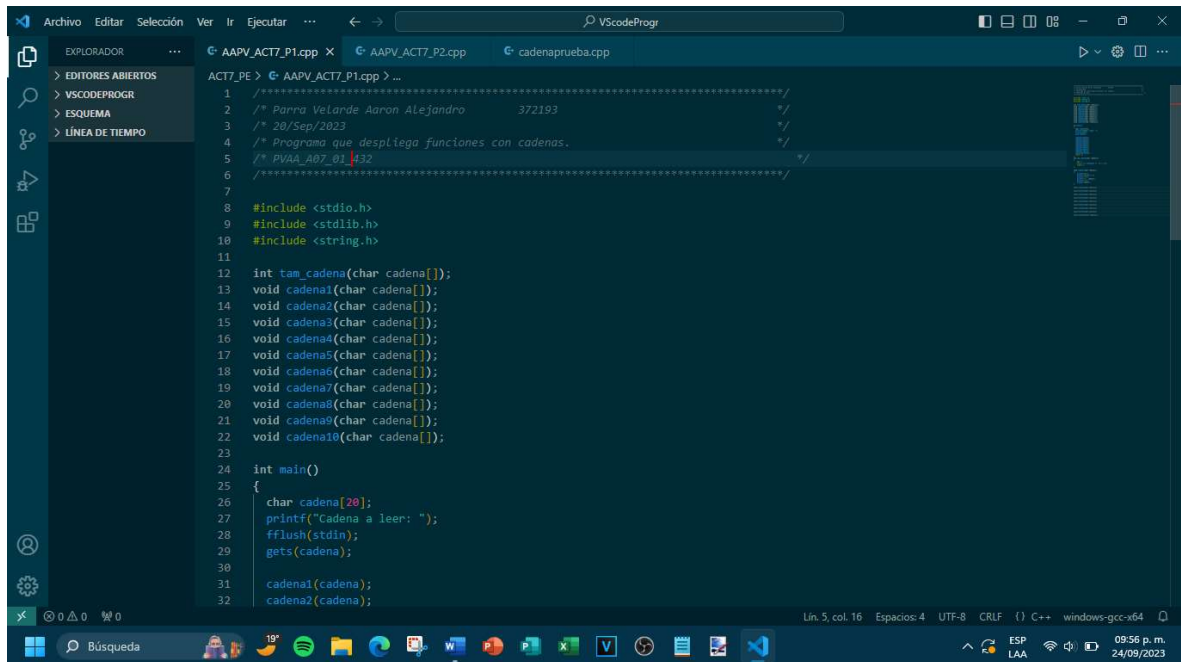
Programación Estructurada  
Prof. Pedro Núñez Yepiz  
Aarón Alejandro Parra Velarde  
Actividad 7 - Anexos

Grupo: 432

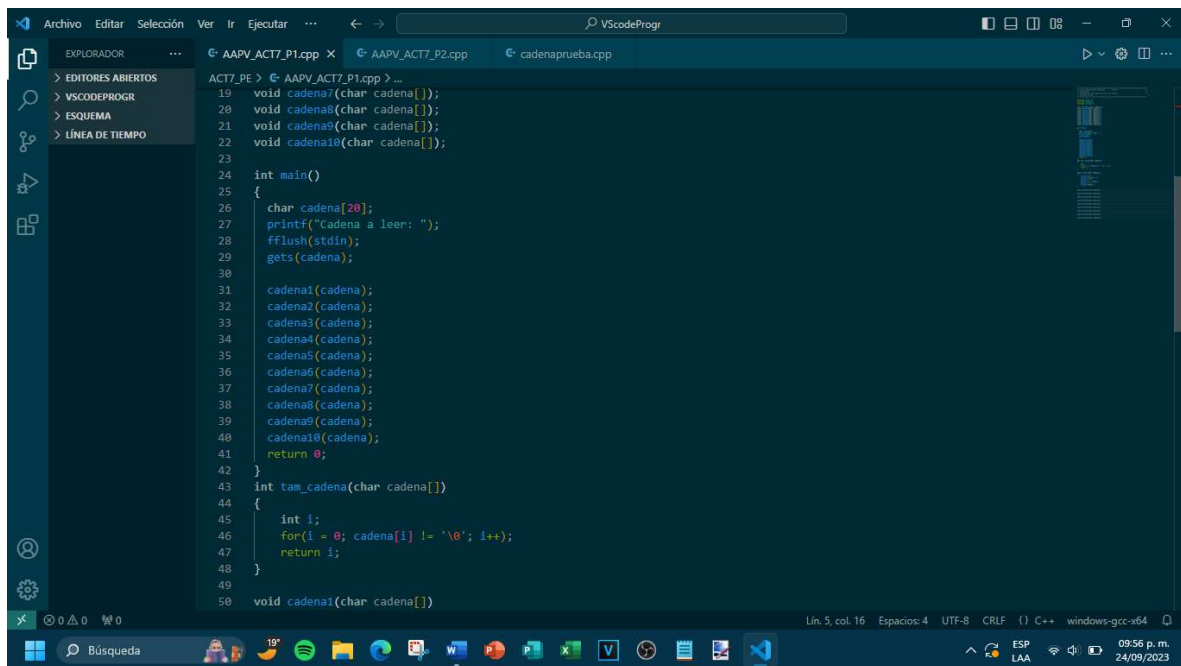
Matrícula: 372193

Ensenada, B.C., 25 de Septiembre de 2023

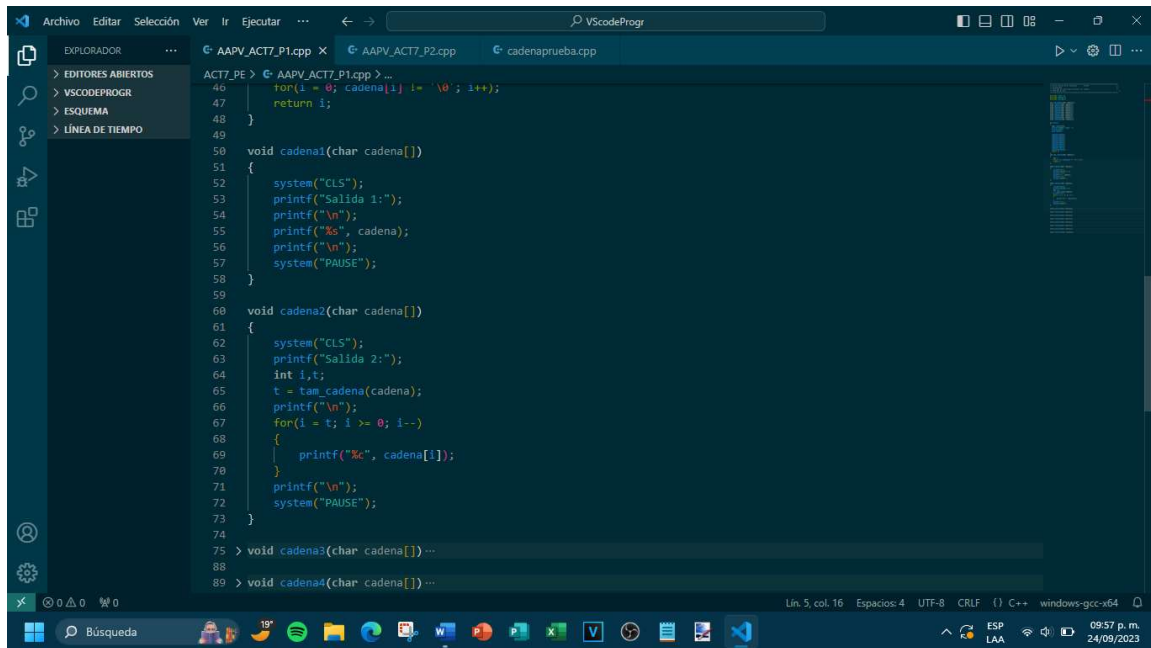
# Parte 1



```
1  /*****
2  /* Parra Velarde Aaron Alejandro 372193
3  /* 20/Sep/2023
4  /* Programa que despliega funciones con cadenas.
5  /* PVAA_A07_01_132
6  *****/
7
8  #include <stdio.h>
9  #include <stdlib.h>
10 #include <string.h>
11
12 int tam_cadena(char cadena[]);
13 void cadena1(char cadena[]);
14 void cadena2(char cadena[]);
15 void cadena3(char cadena[]);
16 void cadena4(char cadena[]);
17 void cadena5(char cadena[]);
18 void cadena6(char cadena[]);
19 void cadena7(char cadena[]);
20 void cadena8(char cadena[]);
21 void cadena9(char cadena[]);
22 void cadena10(char cadena[]);
23
24 int main()
25 {
26     char cadena[20];
27     printf("Cadena a leer: ");
28     fflush(stdin);
29     gets(cadena);
30
31     cadena1(cadena);
32     cadena2(cadena);
```



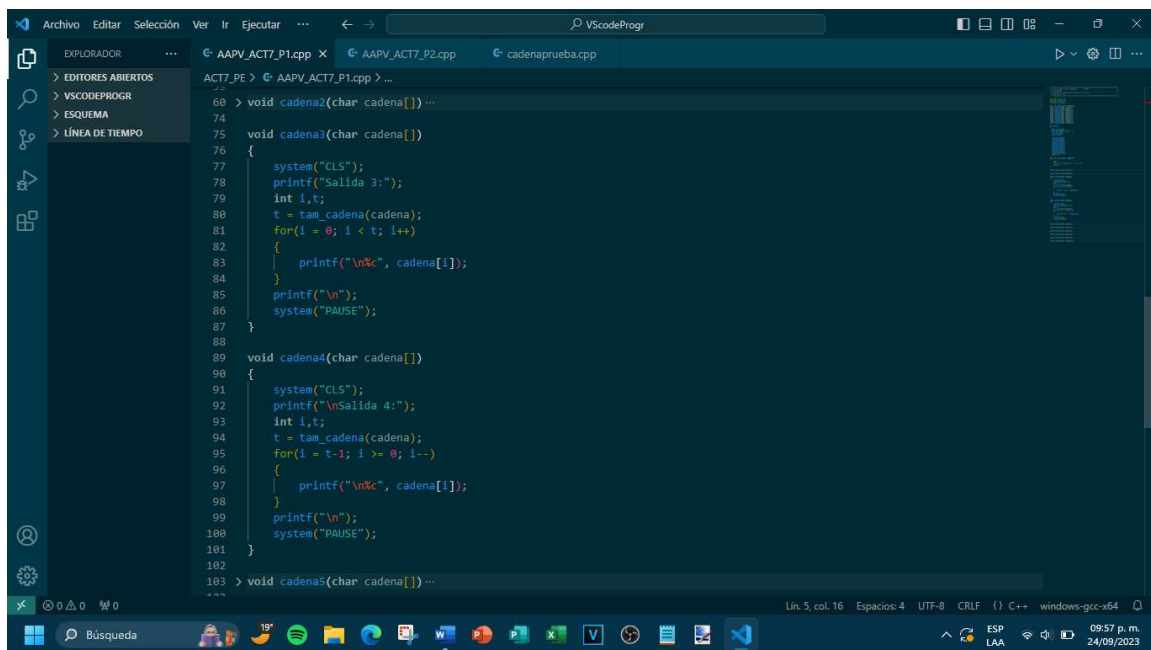
```
19 void cadena7(char cadena[]);
20 void cadena8(char cadena[]);
21 void cadena9(char cadena[]);
22 void cadena10(char cadena[]);
23
24 int main()
25 {
26     char cadena[20];
27     printf("Cadena a leer: ");
28     fflush(stdin);
29     gets(cadena);
30
31     cadena1(cadena);
32     cadena2(cadena);
33     cadena3(cadena);
34     cadena4(cadena);
35     cadena5(cadena);
36     cadena6(cadena);
37     cadena7(cadena);
38     cadena8(cadena);
39     cadena9(cadena);
40     cadena10(cadena);
41     return 0;
42 }
43 int tam_cadena(char cadena[])
44 {
45     int i;
46     for(i = 0; cadena[i] != '\0'; i++);
47     return i;
48 }
49
50 void cadena1(char cadena[])
```



This screenshot shows the Visual Studio Code editor with three open files: AAPV\_ACT7\_P1.cpp, AAPV\_ACT7\_P2.cpp, and cadenaprueba.cpp. The active file is AAPV\_ACT7\_P1.cpp, which contains the following C++ code:

```
ACT7_PE > G AAPV_ACT7_P1.cpp > ...
46     for(i = 0; cadena[i] != '\0'; i++);
47     return i;
48 }
49
50 void cadena1(char cadena[])
51 {
52     system("CLS");
53     printf("Salida 1:");
54     printf("\n");
55     printf("%s", cadena);
56     printf("\n");
57     system("PAUSE");
58 }
59
60 void cadena2(char cadena[])
61 {
62     system("CLS");
63     printf("Salida 2:");
64     int i,t;
65     t = tam_cadena(cadena);
66     printf("\n");
67     for(i = t; i >= 0; i--)
68     {
69         printf("%c", cadena[i]);
70     }
71     printf("\n");
72     system("PAUSE");
73 }
74
75 > void cadena3(char cadena[]) ...
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88
89 > void cadena4(char cadena[]) ...
```

The status bar at the bottom indicates the current line is 5, column 16, with 4 spaces, UTF-8 encoding, CRLF line endings, and the C++ compiler (windows-gcc-x64). The system clock shows 09:57 p.m. on 24/09/2023.



This screenshot shows the Visual Studio Code editor with the same three open files as the previous image. The active file is AAPV\_ACT7\_P1.cpp, which contains the following C++ code:

```
ACT7_PE > G AAPV_ACT7_P1.cpp > ...
75 > void cadena2(char cadena[]) ...
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88
89 void cadena3(char cadena[])
90 {
91     system("CLS");
92     printf("Salida 3:");
93     int i,t;
94     t = tam_cadena(cadena);
95     for(i = 0; i < t; i++)
96     {
97         printf("\n%c", cadena[i]);
98     }
99     printf("\n");
100     system("PAUSE");
101 }
102
103 void cadena4(char cadena[])
104 {
105     system("CLS");
106     printf("\nSalida 4:");
107     int i,t;
108     t = tam_cadena(cadena);
109     for(i = t-1; i >= 0; i--)
110     {
111         printf("\n%c", cadena[i]);
112     }
113     printf("\n");
114     system("PAUSE");
115 }
116
117 > void cadena5(char cadena[]) ...
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```

```
103 void cadena5(char cadena[])
104 {
105     system("CLS");
106     printf("Salida 5:");
107     printf("\n");
108     int i,t,j;
109     t = tam_cadena(cadena);
110
111     for (i = t; i >= 0; i--)
112     {
113         for(j = 0; j <= i; j++)
114         {
115             printf("%c", cadena[j]);
116         }
117         printf("\n");
118     }
119     printf("\n");
120     system("PAUSE");
121 }
122
123 void cadena6(char cadena[])
124 {
125     system("CLS");
126     printf("Salida 6:");
127     printf("\n");
128     int i,t,j;
129     t = tam_cadena(cadena);
130
131     for(i = 0; i <= t; i++)
132     {
133         for(j = t; j >= i; j--)
```

```
131     for(i = 0; i <= t; i++)
132     {
133         for(j = t; j >= i; j--)
134         {
135             printf("%c", cadena[j]);
136         }
137         printf("\n");
138     }
139     printf("\n");
140     system("PAUSE");
141 }
142
143 void cadena7(char cadena[])
144 {
145     system("CLS");
146     printf("Salida 7:");
147     printf("\n");
148     int i,t,j;
149     t = tam_cadena(cadena);
150
151     for(i = 0; i <= t; i++)
152     {
153         for(j = i; j <= t; j++)
154         {
155             printf("%c", cadena[j]);
156         }
157         printf("\n");
158     }
159     printf("\n");
160     system("PAUSE");
161 }
162
```

This screenshot shows the VS Code editor with the file `AAPV_ACT7_P2.cpp` open. The code defines a function `cadena8` that reverses a string in place. It uses a two-pointer technique, with one pointer starting at the beginning and another at the end, swapping characters until they meet in the middle. The function also includes a loop to print the reversed string character by character. The status bar at the bottom indicates the current position is line 5, column 16.

```
155     printf("%c", cadena[j]);
156 }
157 printf("\n");
158 }
159 printf("\n");
160 system("PAUSE");
161 }
162
163 void cadena8(char cadena[])
164 {
165     system("CLS");
166     printf("Salida 8:");
167     printf("\n");
168     int i,t,j;
169     t = tam_cadena(cadena);
170
171     for(i = 0; i <= t; i++)
172     {
173         for(j = t; j >= i; j--)
174         {
175             printf("%c", cadena[j]);
176         }
177         printf("\n");
178     }
179     printf("\n");
180     system("PAUSE");
181 }
182
183 void cadena9(char cadena[])
184 {
185     system("CLS");
186     printf("Salida 9:");
187     printf("\n");
188     int i,t;
189     t = tam_cadena(cadena);
190     printf("\n");
191
192     for(i = 0; i < t; i++)
193     {
194         if (cadena[i] != 'A' && cadena[i] != 'a')
195         {
196             if (cadena[i] != 'E' && cadena[i] != 'e')
197             {
198                 if (cadena[i] != 'I' && cadena[i] != 'i')
199                 {
200                     if (cadena[i] != 'O' && cadena[i] != 'o')
201                     {
202                         if (cadena[i] != 'U' && cadena[i] != 'u')
203                         {
204                             printf("%c", cadena[i]);
205                         }
206                     }
207                 }
208             }
209         }
210     }
211     printf("\n");
212     system("PAUSE");
213 }
```

This screenshot shows the VS Code editor with the file `AAPV_ACT7_P2.cpp` open. The code defines a function `cadena9` that filters out vowels from a string. It iterates through each character of the string and only prints characters that are not vowels (A, E, I, O, U in both uppercase and lowercase). The function also includes a loop to print the filtered string character by character. The status bar at the bottom indicates the current position is line 5, column 16.

```
183 void cadena9(char cadena[])
184 {
185     system("CLS");
186     printf("Salida 9:");
187     printf("\n");
188     int i,t;
189     t = tam_cadena(cadena);
190     printf("\n");
191
192     for(i = 0; i < t; i++)
193     {
194         if (cadena[i] != 'A' && cadena[i] != 'a')
195         {
196             if (cadena[i] != 'E' && cadena[i] != 'e')
197             {
198                 if (cadena[i] != 'I' && cadena[i] != 'i')
199                 {
200                     if (cadena[i] != 'O' && cadena[i] != 'o')
201                     {
202                         if (cadena[i] != 'U' && cadena[i] != 'u')
203                         {
204                             printf("%c", cadena[i]);
205                         }
206                     }
207                 }
208             }
209         }
210     }
211     printf("\n");
212     system("PAUSE");
213 }
```

```
214 void cadena10(char cadena[])
215 {
216     system("CLS");
217     printf("Salida 10:");
218     int i,t;
219     t = tam_cadena(cadena);
220     printf("\n");
221     for(i = 0; i < t; i++)
222     {
223         if (cadena[i] == 'A' || cadena[i] == 'a')
224         {
225             printf("%c", cadena[i]);
226         }
227         else
228         {
229             if (cadena[i] == 'E' || cadena[i] == 'e')
230             {
231                 printf("%c", cadena[i]);
232             }
233             else
234             {
235                 if (cadena[i] == 'I' || cadena[i] == 'i')
236                 {
237                     printf("%c", cadena[i]);
238                 }
239                 else
240                 {
241                     if (cadena[i] == 'O' || cadena[i] == 'o')
242                     {
243                         printf("%c", cadena[i]);
244                     }
245                 }
246             }
247         }
248     }
249 }
```

```
229     else
230     {
231         if (cadena[i] == 'E' || cadena[i] == 'e')
232         {
233             printf("%c", cadena[i]);
234         }
235         else
236         {
237             if (cadena[i] == 'I' || cadena[i] == 'i')
238             {
239                 printf("%c", cadena[i]);
240             }
241             else
242             {
243                 if (cadena[i] == 'O' || cadena[i] == 'o')
244                 {
245                     printf("%c", cadena[i]);
246                 }
247                 else
248                 {
249                     if (cadena[i] == 'U' || cadena[i] == 'u')
250                     {
251                         printf("%c", cadena[i]);
252                     }
253                 }
254             }
255         }
256     }
257 }
258 }
```

Salida 1:  
ENSENADA  
Presione una tecla para continuar . . .

Salida 2:  
ADANESNE  
Presione una tecla para continuar . . .

```
Salida 3:  
E  
N  
S  
E  
N  
A  
D  
A  
Presione una tecla para continuar . . .
```

```
Salida 4:  
A  
D  
A  
N  
E  
S  
N  
E  
Presione una tecla para continuar . . .
```

```
Salida 5:  
ENSENADA  
ENSENADA  
ENSENAD  
ENSENA  
ENSEN  
ENSE  
ENS  
EN  
E  
Presione una tecla para continuar . . .
```

```
Salida 6:  
ADANESNE  
ADANESN  
ADANES  
ADANE  
ADAN  
ADA  
AD  
A  
Presione una tecla para continuar . . .
```

```
Salida 7:  
ENSENADA  
NSENADA  
SENADA  
ENADA  
NADA  
ADA  
DA  
A  
Presione una tecla para continuar . . .
```



Salida 8:

ADANESNE  
ADANESN  
ADANES  
ADANE  
ADAN  
ADA  
AD  
A

Presione una tecla para continuar . . .

Salida 9:

NSND

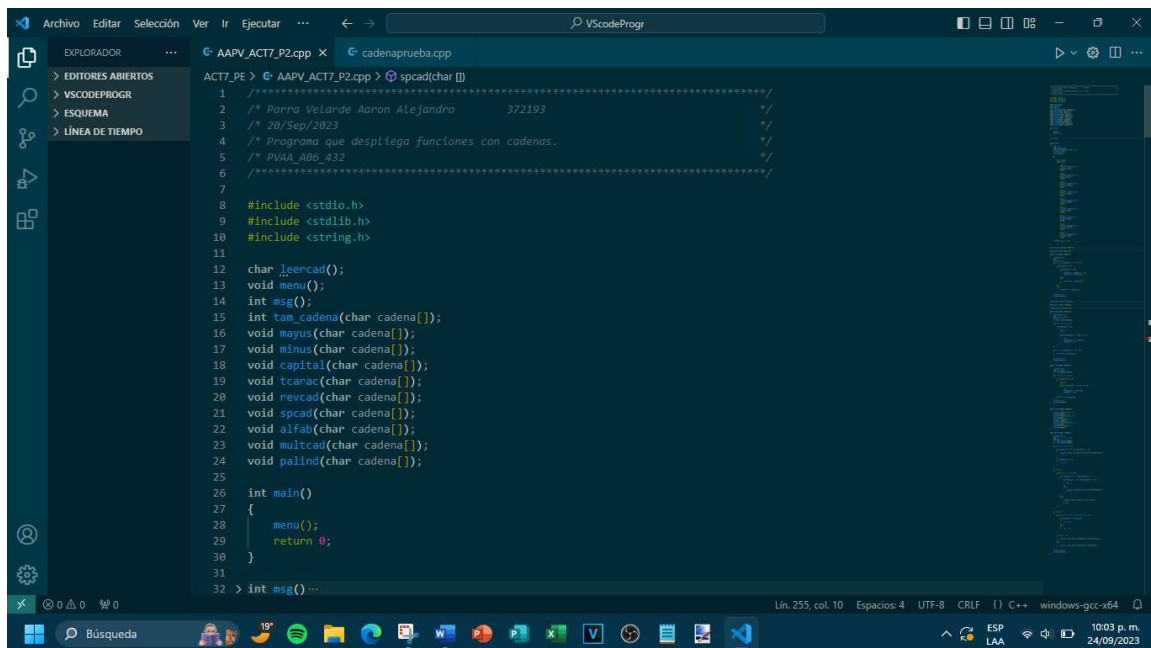
Presione una tecla para continuar . . .

Salida 10:

EEAA

PS C:\Users\aaaron\Desktop\VScodeProgr\ACT7\_PE>

## Parte 2



The screenshot shows the Visual Studio Code editor with a C++ file named `cadena prueba.cpp` open. The code defines several string manipulation functions and a menu-driven main function. The functions include `leercad`, `menu`, `msg`, `tam_cadena`, `mayus`, `minus`, `capital`, `tcarac`, `revcad`, `spcad`, `alfab`, `multcad`, and `palind`. The `main` function calls `menu` and returns 0. The status bar at the bottom indicates the file is at line 255, column 10, using UTF-8 encoding with CRLF line endings.

```
1  /* Parra Velarde Aaron Alejandro 372193 */
2  /* 28/Sep/2023 */
3  /* Programa que despliega funciones con cadenas. */
4  /* PVAA_AB6_432 */
5  /* */
6  /* */
7
8  #include <stdio.h>
9  #include <stdlib.h>
10 #include <string.h>
11
12 char leercad();
13 void menu();
14 int msg();
15 int tam_cadena(char cadena[]);
16 void mayus(char cadena[]);
17 void minus(char cadena[]);
18 void capital(char cadena[]);
19 void tcarac(char cadena[]);
20 void revcad(char cadena[]);
21 void spcad(char cadena[]);
22 void alfab(char cadena[]);
23 void multcad(char cadena[]);
24 void palind(char cadena[]);
25
26 int main()
27 {
28     menu();
29     return 0;
30 }
31
32 > int msg() ...
```



```
30 }
31
32 int msg()
33 {
34     int opc;
35     printf("\nElige una opcion");
36     printf("\n1.- Cadena a MAYUSCULAS");
37     printf("\n2.- Cadena a minusculas");
38     printf("\n3.- Cadena a Capital");
39     printf("\n4.- Cantidad de caracteres");
40     printf("\n5.- Cadena al revés");
41     printf("\n6.- Nueva cadena sin espacios");
42     printf("\n7.- Cadena Alfabética");
43     printf("\n8.- TODAS LAS ANTERIORES");
44     printf("\n9.- Palindromo");
45     printf("\n0.- Salir");
46     printf("\n");
47     scanf("\n%d", &opc);
48
49     return opc;
50 }
51
52
53 void menu()
54 {
55     int opc;
56     char cadena[40];
57     printf("\nCadena a leer: ");
58     fflush(stdin);
59     gets(cadena);
60
61     do
```

```
62 {
63     opc = msg();
64     switch(opc)
65     {
66
67         case 1:
68             printf("\nOpcion 1");
69             mayus(cadena);
70             break;
71
72         case 2:
73             printf("\nOpcion 2");
74             minus(cadena);
75             break;
76
77         case 3:
78             printf("\nOpcion 3");
79             capital(cadena);
80             break;
81
82         case 4:
83             printf("\nOpcion 4");
84             tcarac(cadena);
85             break;
86
87         case 5:
88             printf("\nOpcion 5");
89             revcad(cadena);
90             break;
91
92         case 6:
93             printf("\nOpcion 6");
94             spcad(cadena);
```

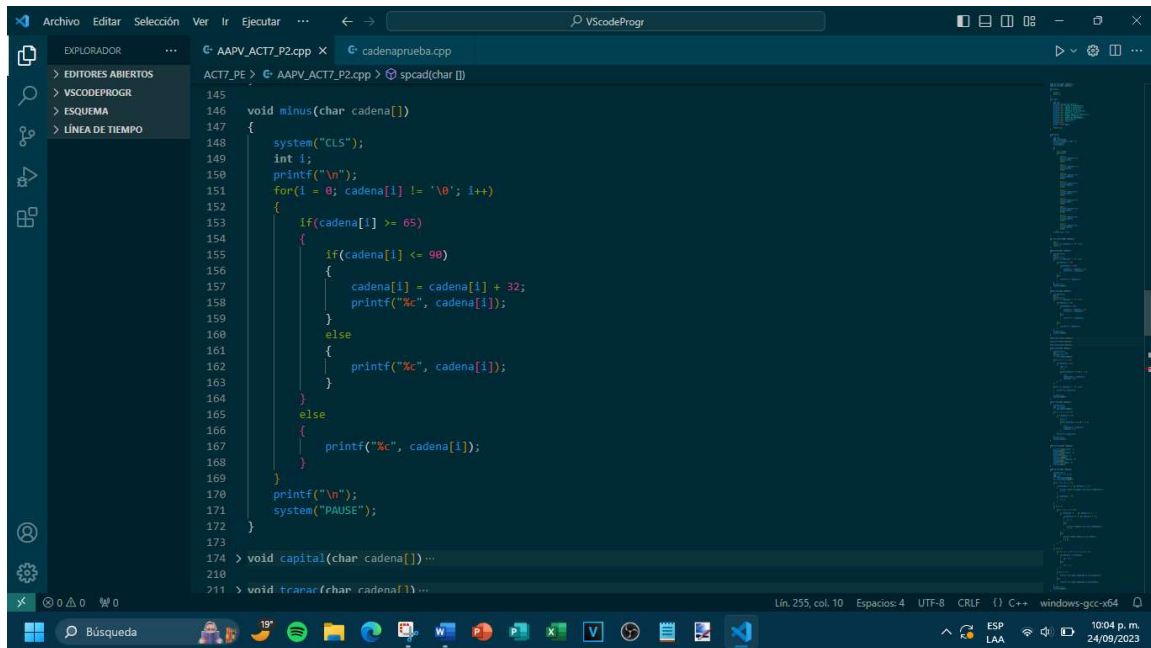
This screenshot shows a VS Code editor window with two files open: `AAPV_ACT7_P2.cpp` and `cadenaprueba.cpp`. The active file is `cadenaprueba.cpp`, which contains a `while` loop menu for string operations. The menu options are:

- Option 5: `tcara` (reverse string)
- Option 6: `spcad` (substring)
- Option 7: `alfab` (alphabetical sort)
- Option 8: `multcad` (concatenation)
- Option 9: `palind` (palindrome check)

```
83         tcara(cadena);
84         break;
85
86     case 5:
87         printf("\nOpcion 5");
88         revcad(cadena);
89         break;
90
91     case 6:
92         printf("\nOpcion 6");
93         spcad(cadena);
94         break;
95
96     case 7:
97         printf("\nOpcion 7");
98         alfab(cadena);
99         break;
100
101     case 8:
102         printf("\nOpcion 8");
103         multcad(cadena);
104         break;
105
106     case 9:
107         printf("\nOpcion 9");
108         palind(cadena);
109         break;
110     }
111 } while (opc != 0);
112
113
114
```

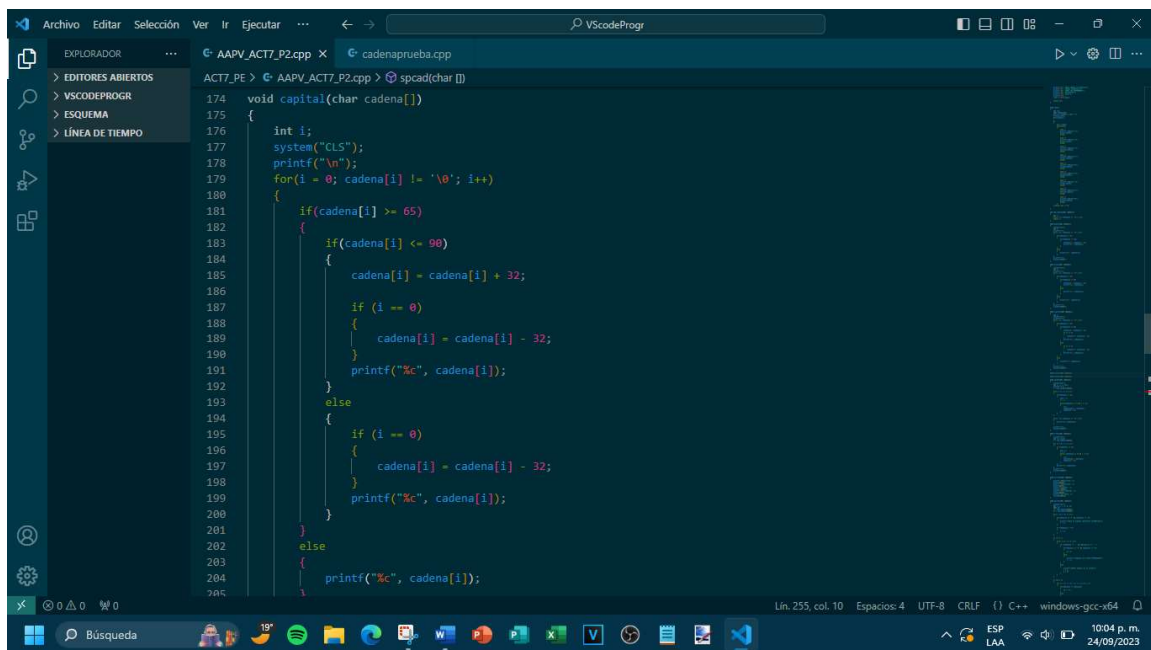
This screenshot shows the same VS Code editor window, but now displaying the implementation of helper functions in `cadenaprueba.cpp`. The functions include `tam_cadena` (string length), `mayus` (uppercase conversion), and `palind` (palindrome check).

```
113 }
114
115 int tam_cadena(char cadena[])
116 {
117     int i;
118     for(i = 0; cadena[i] != '\0'; i++);
119     return i;
120 }
121
122 void mayus(char cadena[])
123 {
124     system("CLS");
125     int i;
126     printf("\n");
127     for(i = 0; cadena[i] != '\0'; i++)
128     {
129         if(cadena[i] >= 97)
130         {
131             if(cadena[i] <= 122)
132             {
133                 cadena[i] = cadena[i] - 32;
134                 printf("%c", cadena[i]);
135             }
136         }
137         else
138         {
139             printf("%c", cadena[i]);
140         }
141     }
142     printf("\n");
143     system("PAUSE");
144 }
```



This screenshot shows the Visual Studio Code editor with the file `cadenaprueba.cpp` open. The editor is displaying the `minus` function, which takes a character array `cadena` as input. The function's logic is as follows: it clears the screen with `system("CLS");`, prints a newline, and then iterates through the array. For each character, if it is greater than or equal to 65 and less than or equal to 90 (uppercase letters), it adds 32 to its ASCII value. Otherwise, it prints the character as is. The function concludes by printing a newline and pausing the execution with `system("PAUSE");`.

```
145
146 void minus(char cadena[])
147 {
148     system("CLS");
149     int i;
150     printf("\n");
151     for(i = 0; cadena[i] != '\0'; i++)
152     {
153         if(cadena[i] >= 65)
154         {
155             if(cadena[i] <= 90)
156             {
157                 cadena[i] = cadena[i] + 32;
158                 printf("%c", cadena[i]);
159             }
160             else
161             {
162                 printf("%c", cadena[i]);
163             }
164         }
165         else
166         {
167             printf("%c", cadena[i]);
168         }
169     }
170     printf("\n");
171     system("PAUSE");
172 }
173
174 > void capital(char cadena[]) ...
210
211 > void tramar(char cadena[]) ...
```

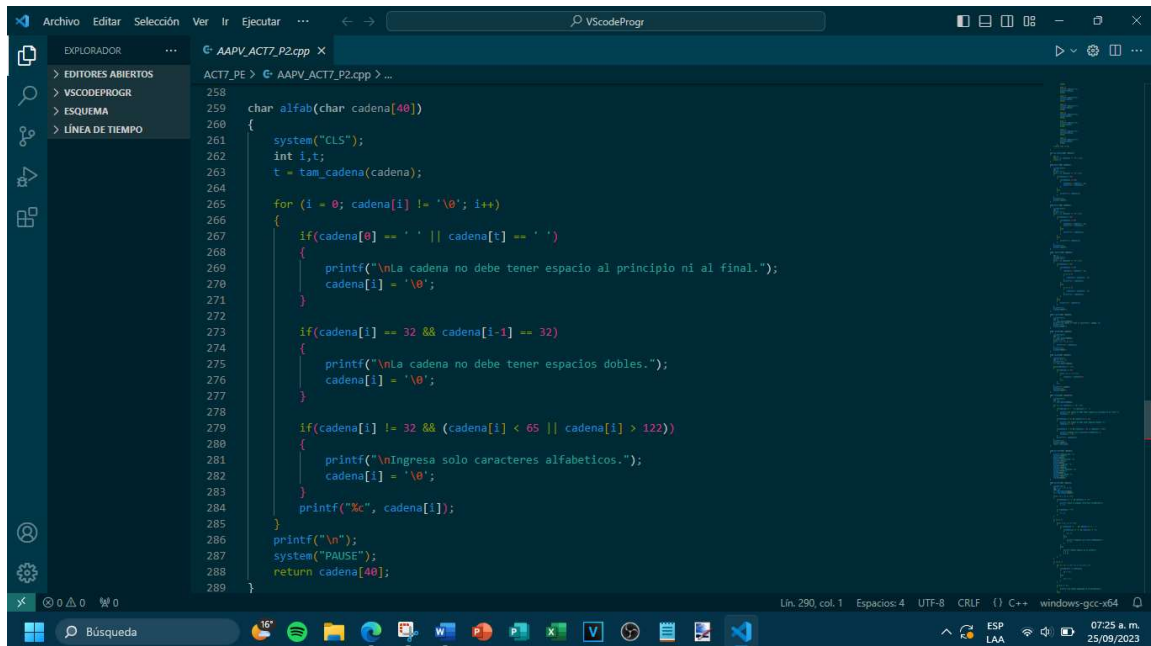


This screenshot shows the Visual Studio Code editor with the same file `cadenaprueba.cpp` open, but now displaying the `capital` function. The logic is similar to the `minus` function, but it subtracts 32 from the ASCII value of uppercase letters (characters with values between 65 and 90) to convert them to lowercase. It also includes a check for lowercase letters (characters with values between 97 and 122) which are left unchanged. The function uses `system("CLS");` to clear the screen and `system("PAUSE");` to pause the execution.

```
174 void capital(char cadena[])
175 {
176     int i;
177     system("CLS");
178     printf("\n");
179     for(i = 0; cadena[i] != '\0'; i++)
180     {
181         if(cadena[i] >= 65)
182         {
183             if(cadena[i] <= 90)
184             {
185                 cadena[i] = cadena[i] - 32;
186
187                 if (i == 0)
188                 {
189                     cadena[i] = cadena[i] - 32;
190                 }
191                 printf("%c", cadena[i]);
192             }
193             else
194             {
195                 if (i == 0)
196                 {
197                     cadena[i] = cadena[i] - 32;
198                 }
199                 printf("%c", cadena[i]);
200             }
201         }
202         else
203         {
204             printf("%c", cadena[i]);
205         }
206     }
207 }
```

```
203     {
204         printf("%c", cadena[i]);
205     }
206     printf("\n");
207     system("PAUSE");
208 }
209
210 void tcarac(char cadena[])
211 {
212     system("CLS");
213     int t;
214     t = tam_cadena(cadena);
215     printf("\nLa cadena %s tiene %d caracteres", cadena, t);
216     printf("\n");
217     system("PAUSE");
218 }
219
220 void revcad(char cadena[])
221 {
222     system("CLS");
223     int i, t;
224     t = tam_cadena(cadena);
225     printf("\n");
226     for(i = t; i >= 0; i--)
227     {
228         printf("%c", cadena[i]);
229     }
230     printf("\n");
231     system("PAUSE");
232 }
233
```

```
220     printf("%c", cadena[i]);
221     printf("\n");
222     system("PAUSE");
223 }
224
225 void spcad(char cadena[])
226 {
227     system("CLS");
228     int j = 0, i, t;
229     printf("\n");
230     t = tam_cadena(cadena);
231     while(cadena[j] != '\0')
232     {
233         if(cadena[j] == 32)
234         {
235             for(i = j; i < t; i++)
236             {
237                 cadena[i] = cadena[i+1];
238             }
239             t--;
240             j++;
241         }
242         j++;
243     }
244     printf("%s", cadena);
245     printf("\n");
246     system("PAUSE");
247 }
248
249 void alfab(char cadena[])
250 {
251
```

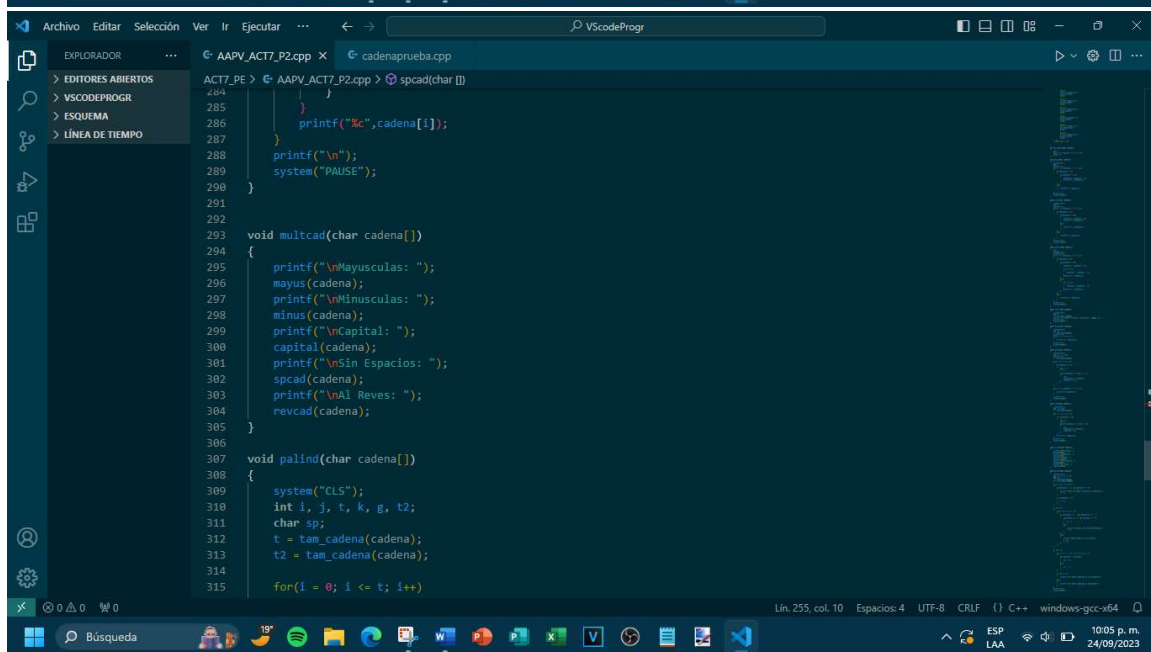


```
char alfab(char cadena[40])
{
    system("CLS");
    int i,t;
    t = tam_cadena(cadena);

    for (i = 0; cadena[i] != '\0'; i++)
    {
        if(cadena[0] == ' ' || cadena[t] == ' ')
        {
            printf("\nLa cadena no debe tener espacio al principio ni al final.");
            cadena[i] = '\0';
        }

        if(cadena[i] == 32 && cadena[i-1] == 32)
        {
            printf("\nLa cadena no debe tener espacios dobles.");
            cadena[i] = '\0';
        }

        if(cadena[i] != 32 && (cadena[i] < 65 || cadena[i] > 122))
        {
            printf("\nIngresa solo caracteres alfabeticos.");
            cadena[i] = '\0';
        }
        printf("%c", cadena[i]);
    }
    printf("\n");
    system("PAUSE");
    return cadena[40];
}
```



```
void multcad(char cadena[])
{
    printf("\nMayusculas: ");
    mayus(cadena);
    printf("\nMinusculas: ");
    minus(cadena);
    printf("\nCapital: ");
    capital(cadena);
    printf("\nSin Espacios: ");
    spcad(cadena);
    printf("\nAl Reves: ");
    revcad(cadena);
}

void palind(char cadena[])
{
    system("CLS");
    int i, j, t, k, g, t2;
    char sp;
    t = tam_cadena(cadena);
    t2 = tam_cadena(cadena);

    for(i = 0; i <= t; i++)
```

```
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LÍNEA DE TIEMPO
315 for(i = 0; i <= t; i++)
316 {
317     if(cadena[i] >= '1' && cadena[i] <= '9')
318     {
319         printf("\nSolo se aceptan caracteres alfabeticos");
320         i = t;
321     }
322
323     if (cadena[i] > '9')
324     {
325         k = 1;
326     }
327 }
328
329 if (k == 1)
330 {
331     for(i = 0; i <= t; i++)
332     {
333         if (cadena[i] != ' ' && cadena[i+1] != ' ')
334         {
335             if(cadena[i] >= 'A' && cadena[i] <= 'Z')
336             {
337                 g = 1;
338             }
339             else
340             {
341                 printf("\nIngresa solo letras MAYUSCULAS");
342                 i = t;
343             }
344         }
345     }
346 }
```

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```
347     }
348     else
349     {
350         printf("\nDoble espacio no es valido");
351         i = t;
352         g = 0;
353     }
354 }
355
356 if (g == 1)
357 {
358     for (i = 0, j = t2 - 1; i < j; i++, j--)
359     {
360         if(cadena[i] != cadena[j])
361         {
362             sp = '0';
363         }
364         else
365         {
366             sp = '1';
367         }
368     }
369
370     if (sp == '0')
371     {
372         printf("\nLa cadena ingresada no es palindromo");
373     }
374     else
375     {
376         printf("\nLa cadena ingresada es palindromo");
377     }
378 }
```

Lin. 255, col. 10 Espacios: 4 UTF-8 CRLF {} C++ windows-gcc-x64 10:06 p. m. 24/09/2023



```
ACT7_PE > C:\AAPV_ACT7_P2.cpp > spcad(char [])
359 {
360     sp = '0';
361 }
362 else
363 {
364     sp = '1';
365 }
366 }
367
368 if (sp == '0')
369 {
370     printf("\nLa cadena ingresada no es palindromo");
371 }
372 else
373 {
374     printf("\nLa cadena ingresada es palindromo");
375 }
376
377 printf("\n");
378 system("PAUSE");
379 }
```

AARON PARRA  
Presione una tecla para continuar . . .

aaron parra  
Presione una tecla para continuar . . .

Aaron parra  
Presione una tecla para continuar . . .

La cadena Aaron parra tiene 11 caracteres  
Presione una tecla para continuar . . .

arrap noraA  
Presione una tecla para continuar . . .

AaronParra  
Presione una tecla para continuar . . .

Aaron Parra  
Presione una tecla para continuar . . .

La cadena ingresada no es palindromo  
Presione una tecla para continuar . . .