Introducción a la computación

1er cuatrimestre de 2019

Conversor de Fahrenheit a Celsius

Clase pasada (f2c_v4.cpp)

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

/* conversor fahrenheit a celsius */
int main(int argc, char* argv[]) {
   float fahr, cel;
   fahr = atof(argv[1]);
   cel = (5*(fahr-32))/9;
   printf("fahr=%.2f -> cel=%.2f\n",fahr,cel);
   return 0;
}
```

Conversor de Fahrenheit a Celsius

Lectura de argumentos (f2c_v4.cpp)

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

/* conversor fahrenheit a celsius */
int main(int argc, char* argv[]) {
   float fahr, cel;
   fahr = atof(argv[1]);
   cel = (5*(fahr-32))/9;
   printf("fahr=%.2f -> cel=%.2f\n",fahr,cel);
   return 0;
}
```

Conversor de Fahrenheit a Celsius

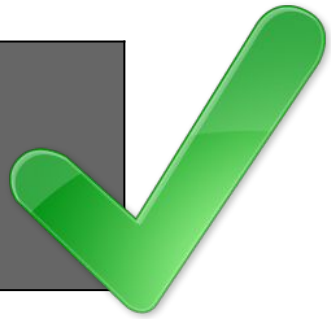
Lectura de argumentos

```
#./f2c 80
fahr=80.00 -> cel=26.67
```

Conversor de Fahrenheit a Celsius

Lectura de argumentos

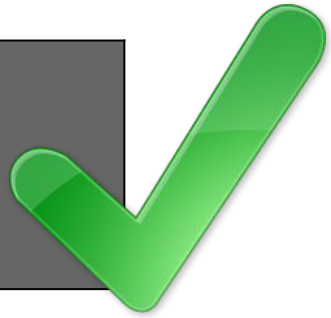
```
#./f2c 80
fahr=80.00 -> cel=26.67
```



Conversor de Fahrenheit a Celsius

Lectura de argumentos

```
#./f2c 80
fahr=80.00 -> cel=26.67
```

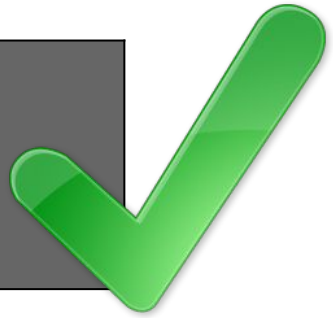


```
#./f2c
Segmentation fault (core dumped)
```

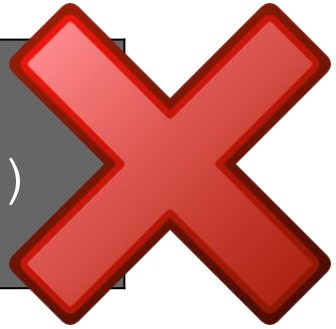
Conversor de Fahrenheit a Celsius

Lectura de argumentos

```
#./f2c 80
fahr=80.00 -> cel=26.67
```



```
#./f2c
Segmentation fault (core dumped)
```



Conversor de Fahrenheit a Celsius

Sentencias condicionales (f2c_v5.cpp)

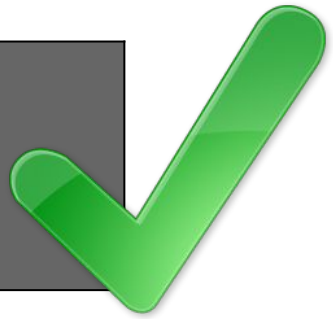
```
#include <stdio.h>
#include <stdlib.h>

/* conversor fahrenheit a celsius */
int main(int argc, char* argv[]) {
    int ret;
    float fahr, cel;
    if (argc-1 != 1) {
        printf("uso: ./f2c valor\n");
        ret = 1;
    } else {
        fahr = atof(argv[1]);
        cel = (5*(fahr-32))/9;
        printf("fahr=%.2f -> cel=%.2f\n",fahr,cel);
        ret = 0;
    }
    return ret;
}
```

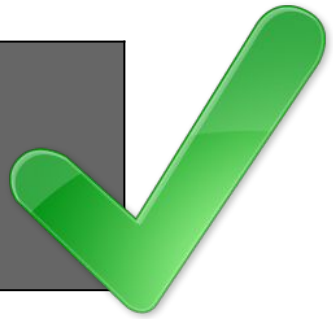
Conversor de Fahrenheit a Celsius

Lectura de argumentos

```
#./f2c 80
fahr=80.00 -> cel=26.67
```



```
#./f2c
uso: ./f2c valor
```



Conversor de Fahrenheit a Celsius

Valor de retorno (f2c_v5.cpp)

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

/* conversor fahrenheit a celsius */
int main(int argc, char* argv[]) {
    int ret;
    float fahr, cel;
    if (argc-1 != 1) {
        printf("uso: ./f2c valor\n");
        ret = 1;
    } else {
        fahr = atof(argv[1]);
        cel = (5*(fahr-32))/9;
        printf("fahr=%.2f -> cel=%.2f\n",fahr,cel);
        ret = 0;
    }
    return ret;
}
```

Conversor de Fahrenheit a Celsius

Ejercicio

Generar una tabla de conversión de grados Fahrenheit a Celsius partiendo de 0 hasta 100 a intervalos de 10.

Conversor de Fahrenheit a Celsius

Ciclos (f2c_v6.cpp)

```
#include <stdio.h>

/* conversor fahrenheit a celsius */
int main(int argc, char* argv[]) {
   float fahr, cel;
   fahr = 0;
   while(fahr < 101) {
      cel = (5*(fahr-32))/9;
      printf("fahr=%6.2f -> cel=%6.2f\n",fahr,cel);
      fahr = fahr + 10;
   }
   return 0;
}
```

Conversor de Fahrenheit a Celsius

Lectura de argumentos

```
#./f2c
fahr=  0.00 -> cel=-17.78
fahr= 10.00 -> cel=-12.22
fahr= 20.00 -> cel= -6.67
fahr= 30.00 -> cel= -1.11
fahr= 40.00 -> cel=  4.44
fahr= 50.00 -> cel= 10.00
fahr= 60.00 -> cel= 15.56
fahr= 70.00 -> cel= 21.11
fahr= 80.00 -> cel= 26.67
fahr= 90.00 -> cel= 32.22
fahr=100.00 -> cel= 37.78
```

Conversor de Fahrenheit a Celsius

Ejercicio

Generar una tabla de conversión de grados Fahrenheit a Celsius partiendo de 0 hasta 100 a intervalos de 10 y a continuación la conversión de todos los valores entre 101 y 110.

Conversor de Fahrenheit a Celsius

f2c_v7.cpp

```
#include <stdio.h>

/* conversor fahrenheit a celsius */
int main(int argc, char* argv[]) {
     float fahr, cel;
     fahr = 0;

     while(fahr < 101) {
          cel = (5*(fahr-32))/9;
          printf("fahr=%6.2f -> cel=%6.2f\n",fahr,cel);
          fahr = fahr + 10;
     }

     fahr = 101;
     while(fahr < 111) {
          cel = (5*(fahr-32))/9;
          printf("fahr=%6.2f -> cel=%6.2f\n",fahr,cel);
          fahr = fahr + 1;
     }
     return 0;
}
```

Conversor de Fahrenheit a Celsius

Código repetido (f2c_v7.cpp)

```
#include <stdio.h>

/* conversor fahrenheit a celsius */
int main(int argc, char* argv[]) {
     float fahr, cel;

     fahr = 0;
     while(fahr < 101) {
          cel = (5*(fahr-32))/9;
          printf("fahr=%6.2f -> cel=%6.2f\n",fahr,cel);
          fahr = fahr + 10;
     }

     fahr = 101;
     while(fahr < 111) {
          cel = (5*(fahr-32))/9;
          printf("fahr=%6.2f -> cel=%6.2f\n",fahr,cel);
          fahr = fahr + 1;
     }
     return 0;
}
```

Conversor de Fahrenheit a Celsius

Funciones (f2c_v8.cpp)

```
#include <stdio.h>
/* conversor fahrenheit a celsius */

void convertir(int valorInicial, int valorFinal, int intervalo) {
     float fahr, cel;
     fahr = valorInicial;
     while(fahr < valorFinal+1) {
          cel = (5*(fahr-32))/9;
          printf("fahr=%6.2f -> cel=%6.2f\n",fahr,cel);
          fahr = fahr + intervalo;
     }
}

int main(int argc, char* argv[]) {
     convertir(0, 100, 10);
     convertir(101, 110, 1);
     return 0;
}
```

Conversor de Fahrenheit a Celsius

Tipo void (f2c_v8.cpp)

```
#include <stdio.h>
/* conversor fahrenheit a celsius */

void convertir(int valorInicial, int valorFinal, int intervalo) {
     float fahr, cel;
     fahr = valorInicial;
     while(fahr < valorFinal+1) {
          cel = (5*(fahr-32))/9;
          printf("fahr=%6.2f -> cel=%6.2f\n",fahr,cel);
          fahr = fahr + intervalo;
     }
}

int main(int argc, char* argv[]) {
     convertir(0, 100, 10);
     convertir(101, 110, 1);
     return 0;
}
```

Conversor de Fahrenheit a Celsius

Funciones: encapsular y abstraer (f2c_v9.cpp)

```
#include <stdio.h>
/* conversor fahrenheit a celsius */

float fahrenheit2Celsius(float valor) {
     return (5*(valor-32))/9;
}

void convertir(int valorInicial, int valorFinal, int intervalo) {
     float fahr, cel;
     fahr = valorInicial;
     while(fahr < valorFinal+1) {
          cel = fahrenheit2Celsius(fahr);
          printf("fahr=%6.2f -> cel=%6.2f\n",fahr,cel);
          fahr = fahr + intervalo;
     }
}

int main(int argc, char* argv[]) {
     convertir(0, 100, 10);
     convertir(101, 110, 1);
     return 0;
}
```

Preguntas