Ejemplos de programas para calcular el factorial en varios lenguajes

- **Programa para calcular el factorial de n**:

n! = 1*2*3*….*(n-1)*n

Definición matemática: $n! = \begin{cases} 1 & n \leq 1 \\ n * (n-1)! & \forall n > 1 \end{cases}$

- Ejemplos: 5!=120, 10!=3628800

Fortran

```
INTEGER FUNCTION Factorial(n)
IMPLICIT NONE
INTEGER, INTENT(IN) :: n
INTEGER :: i, Ans
Ans = 1
DO i = 1, n
   Ans = Ans * i
END DO
Factorial = Ans
END FUNCTION Factorial
```

Cobol

```
IDENTIFICATION DIVISION.
      PROGRAM-ID. SAMPLE.

      DATA DIVISION.
      WORKING-STORAGE SECTION.

        77 fact pic 9(15) comp.
        77 n pic 99.
        77 i pic 99.
        77 ist pic XX.
        77 factst pic X(18).

      PROCEDURE DIVISION.
        move 16 to n
        move 0 to i
        move 1 to fact
```

```
perform until i greater than n
            move i to ist
            move fact to factst
            display ist "! = "
factst
            add 1 to i
            multiply i by fact
              on size error
display "value too big"
            end-multiply
          end-perform.
          stop run.
```

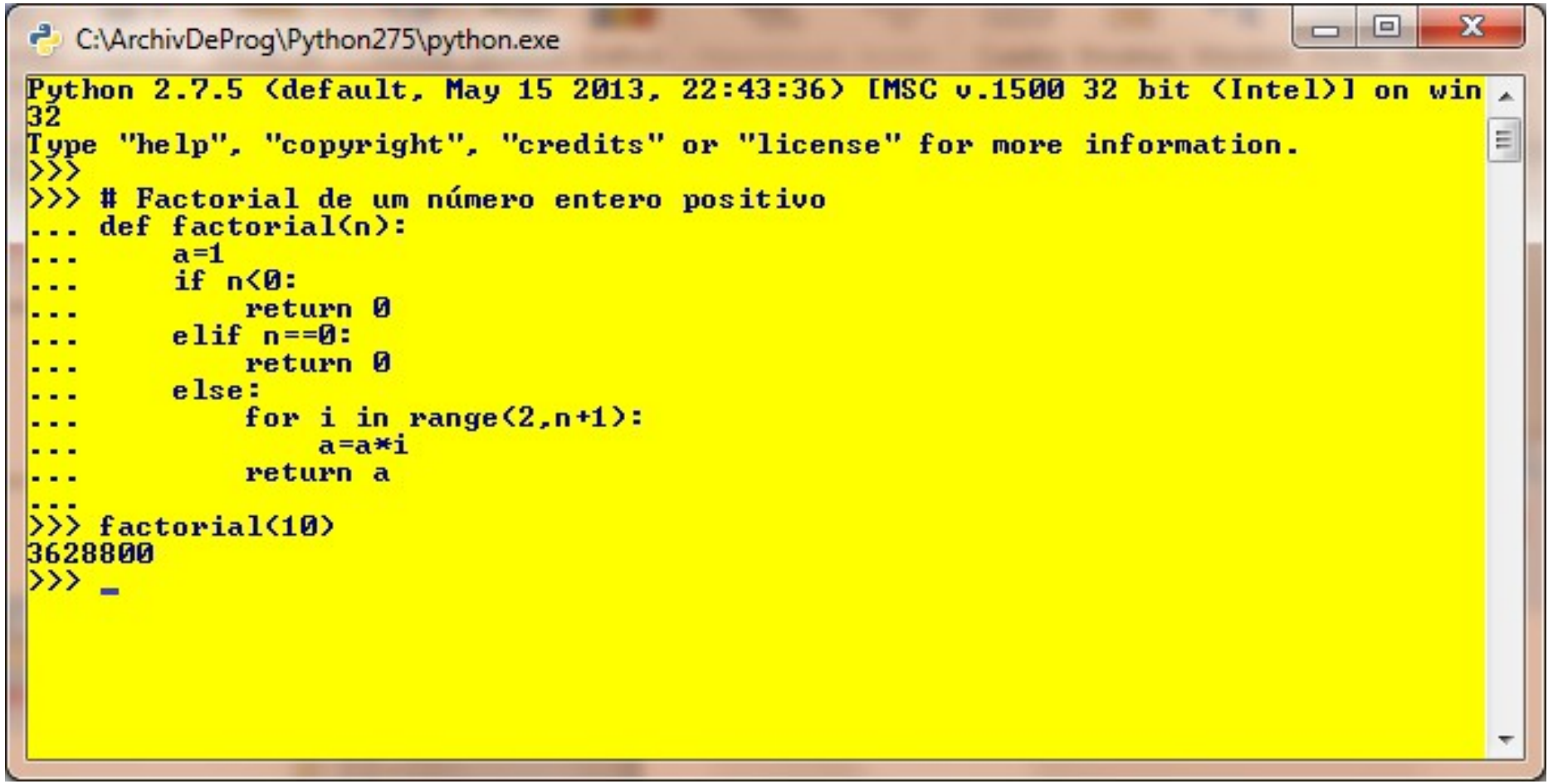
Pascal

```
FUNCTION Factorial(n:integer):integer;
begin
 var temp,f:integer;
 temp:=n;
 f=1;
   WHILE n>=1 DO
     BEGIN
       f:=f*n;
       n:=n-1;
       END;
end;
```

Python

```
# Factorial de um número entero positivo
def factorial(n):
    a=1
    if n<0:
        return 0
    elif n==0:
        return 0
    else:
        for i in range(2,n+1):
            a=a*i
        return a
```

Python


C:\ArchivDeProg\Python275\python.exe
Python 2.7.5 (default, May 15 2013, 22:43:36) [MSC v.1500 32 bit (Intel)] on win
32
Type "help", "copyright", "credits" or "license" for more information.
>>>
>>> # Factorial de um número entero positivo
... def factorial(n):
...   a=1
...   if n<0:
...   return 0
...   elif n==0:
...   return 0
...   else:
...   for i in range(2,n+1):
...   a=a*i
...   return a
...
>>> factorial(10)
3628800
>>> _

C / C++

```
long factorial( int numero )
{
     long resultado = 1;
     int i = 0;

     /* función iterativa */
     for ( i = numero; i >= 1; i-- )
          resultado *= i;

     return resultado;
}
```

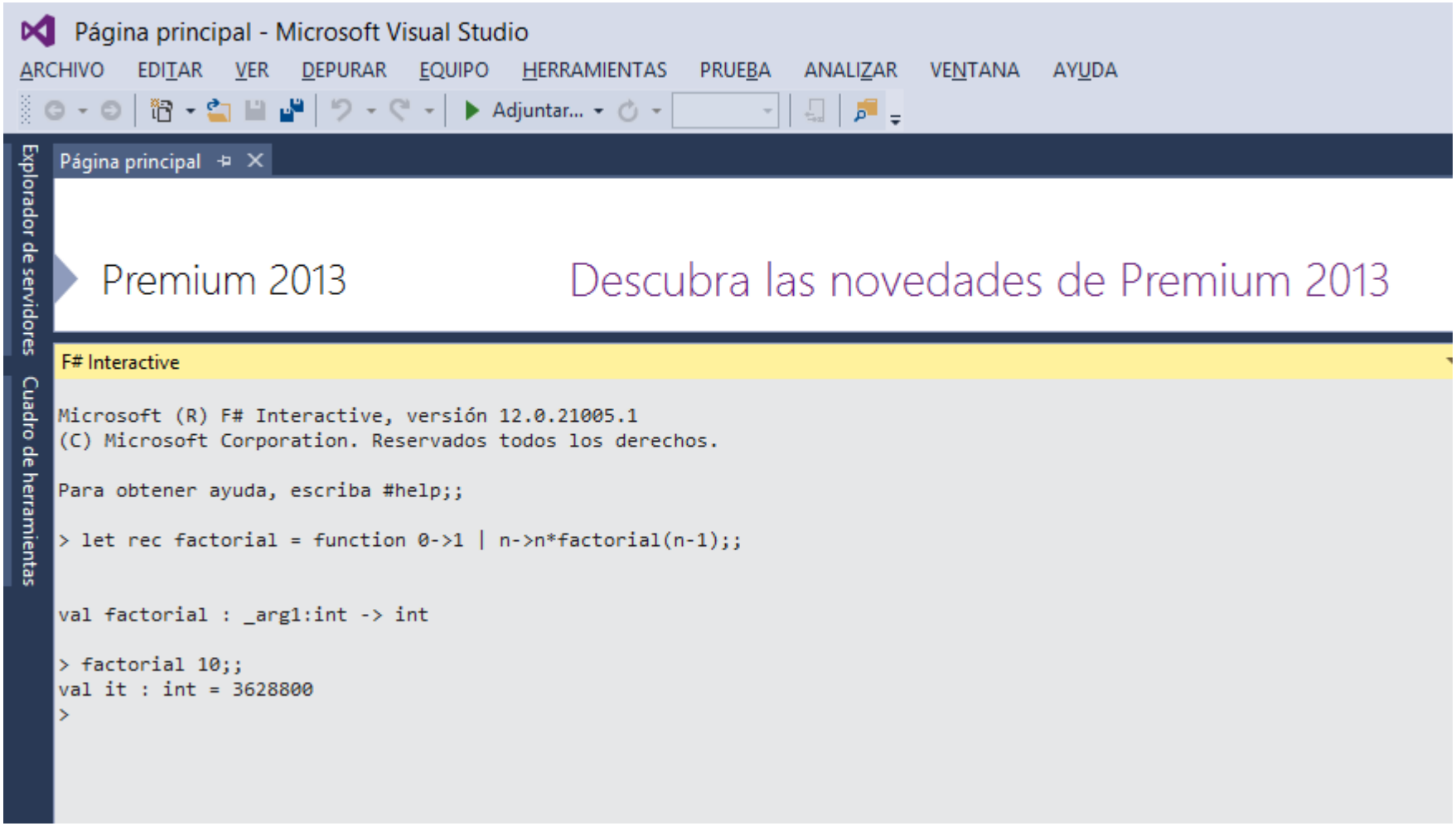
Prolog

```
% La sintaxis es factorial(N, F)
% -> Factorial de N es F
% (el resultado se guarda en F)

factorial(0, 1).
factorial(1, 1).
factorial(N, F) :- N>0, N1 is N - 1,
factorial(N1, F1), F is N * F1.


% el factorial se llama recursivamente
% dejando el resultado en F
```

F#

```
> let rec factorial = function 0->1
                    | n->n*factorial(n-1);;
```

F#


Página principal - Microsoft Visual Studio
ARCHIVO EDITAR VER DEPURAR EQUIPO HERRAMIENTAS PRUEBA ANALIZAR VENTANA AYUDA
Adjuntar...
Página principal
Explorador de servidores
Cuadro de herramientas
Premium 2013
Descubra las novedades de Premium 2013
F# Interactive
Microsoft (R) F# Interactive, versión 12.0.21005.1
(C) Microsoft Corporation. Reservados todos los derechos.
Para obtener ayuda, escriba #help;;
> let rec factorial = function 0->1 | n->n*factorial(n-1);;
val factorial : _arg1:int -> int
> factorial 10;;
val it : int = 3628800
>

APL

```
Factorial(n) := ×/⍳n
```

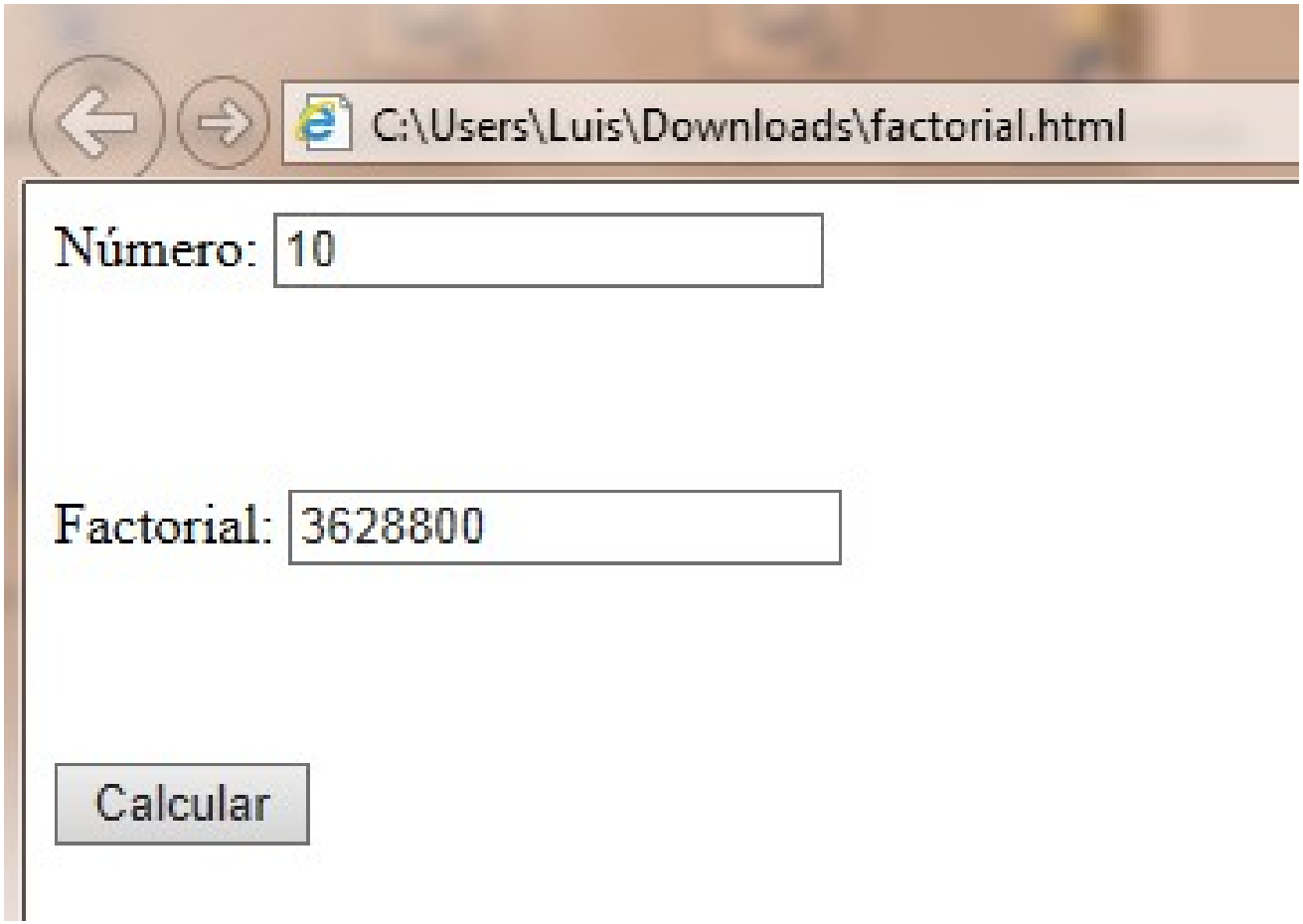
Explicacion:

```
⍳n = [1,2,3,...,n]
×/[1,2,3,...,n] = 1×2×3×...×n
```

Javascript

```
<html>
<head>
<title>Factorial</title>
<script language="javascript">
function factorial (){
        var factorial = 1;
        for (var i=1; i <= document.getElementById ('n').value; i++){
            factorial *= i;
        }
        document.getElementById ('resultado').value = factorial;
}
</script>
</head>

<body>
<form onsubmit="javascript: factorial ();return (false);">
Número: <input type="text" name="n" id="n" />
<br><br><br><br>
Factorial: <input type="text" name="resultado" id="resultado" />
<br><br><br><br>
<input type="submit" value="Calcular" />
</form>
</body>
```

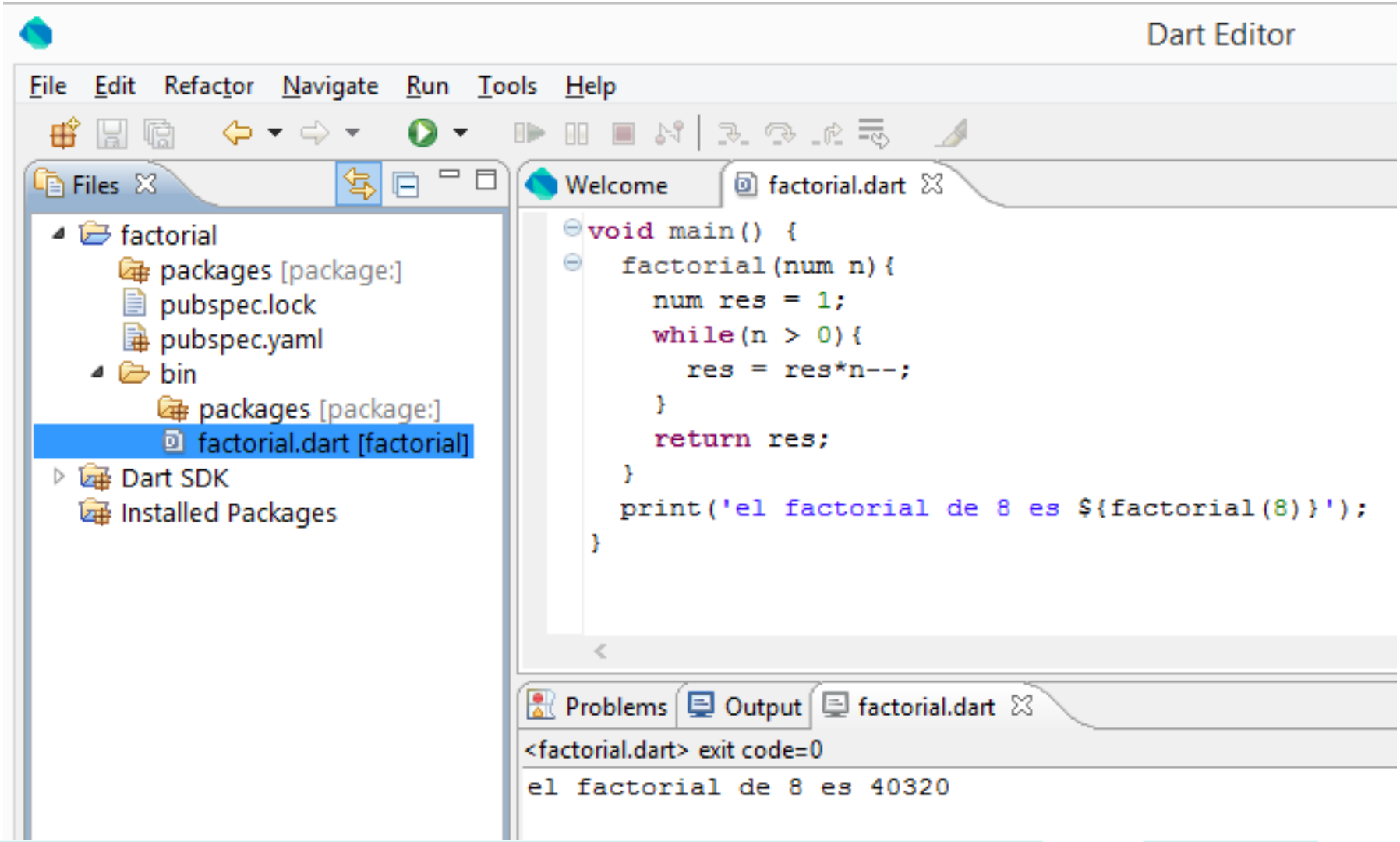
Javascript


C:\Users\Luis\Downloads\factorial.html
Número: 10
Factorial: 3628800
Calcular

DART

```
//iterativo
void main() {
  factorial(num n){
    num res = 1;
    while(n > 0){
      res = res*n--;
    }
    return res;
  }
  print('el factorial de 8 es ${factorial(8)}');
}
```

DART


Dart Editor
File Edit Refactor Navigate Run Tools Help
Files
factorial
packages [package:]
pubspec.lock
pubspec.yaml
bin
packages [package:]
factorial.dart [factorial]
Dart SDK
Installed Packages
Welcome
factorial.dart
void main() {
factorial(num n){
num res = 1;
while(n > 0){
res = res*n--;
}
return res;
}
print('el factorial de 8 es ${factorial(8)}');
}
Problems
Output
factorial.dart
<factorial.dart> exit code=0
el factorial de 8 es 40320

Java

```
//iterativo
public static void main(String args[]){
   private int factorial(int n){
     int res = 1;
     while(n > 0){
       res = res*n;
       n--;
     }
   return res;
   }
   System.out.println("5! = " + factorial(5));
}
```

```
//recursivo

public static void main(String args[]){
   private int factorial(int n){
     if ( n <= 1 ) return 1;
      else return n*factorial(n-1);
   }
   System.out.println("5! = " + factorial(5));
}
```