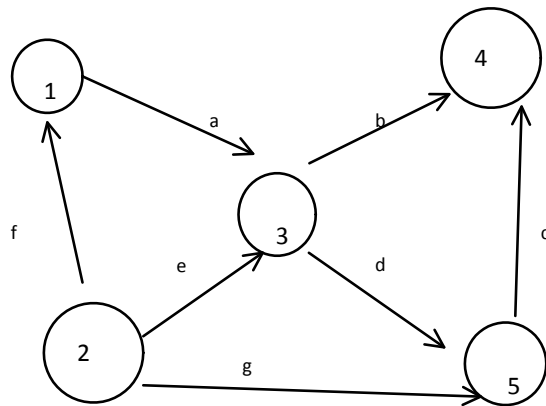


Σημαφόροι: είναι σφαιρικές μεταβλητές, μεταβλητές δηλαδή που είναι ορατές από όλες τις διεργασίες και χρησιμοποιούνται κυρίως για τον συγχρονισμό τους. Χρησιμοποιούν τις δύο συναρτήσεις που βλέπετε στο πλάι, wait και signal.



```
Signal( sem s)
{
  s++;
}
```

```
Wait( sem s)
{
  While(s==0)
  ; (sketo erwthmatiko shmainei ;oti den ektelei
tipota mexri o shmaforos s na papsei na einai 0.
  s--;
}
```

Dyo morfes askhshs.

Kai stis 2 morfes askhshs prin xekinhsoume thn lysh onomazoume kathe velaki tou sxhmatos me ena gramma pros dieykolysh mas.

Morfh 1h. Oloi oi shmaforoi exoun arxika thn timh 0. Kathe diergasia kanei wait ola ta velakia pou phgainoun pros aythn. Epeita ektelei ton kwdika ths (code) kai meta kanei signal ola ta velakia pou feygoun apo ayth. Gia paradeigma h diergasia 1 opws vlepete parakatw kanei wait ton shmaforo f mias kai to velaki f erxetai pros aythn kai afou ekteleasei ton kwdika ths (code) kanei signal ton shmaforo a pou to velaki tou feygei apo aythn.

```
P1
{
  Wait(f);
  Code
  Signal(a);
}
```

```
P2
{
  Code
  Signal(f);
  Signal( e);
  Signal(g);
}
```

```
P3
{
  Wait(a);
  Wait( e);
  Code
  Signal(d);
  Signal(b);
}
```

```
P4
{
  Wait(b);
  Wait ( c);
  Code
}
```

```
P5
{
  Wait( g);
  Wait( d);
  Code
  Signal( c);
}
```

Na thymaste panta oti ola ta wait einai prin to code Kai ola ta signal meta apo ayton. Mporei na mhn yparxei kanena wait h kanena signal alla panta to code tha einai sthn mesh. (wait.... Code.... Signal)

Kalh epityxia!! 2 monadoules sigoures einai aytes..

2h morfhi. Oi shmaforoi exoun thn timh 1 arxika. Se aythn thn periptwsh oi kwdikes einai opws kai oi parapanw me thn monh diafora oti vazoume kai ta antistoixa wait me ta yparxonta signals. (kitrino xrwma). To kathe wait apo ayta pou mpainoun extra exei ws skopo na kleisei ton shmaforo pou einai anoixtos wste na mporei na ektelestei h diergasia prin apo tis alles pou prepei na perimenoun. Kleinei loipon tous shmaforous (h wait tous kanei aytomata 0, kai meta exoume thn katastash ths morfhs 1 kai gia ayto o kwdikas apo ekei kai pera einai o idios).

```
P1
{
  Wait(f);
  wait(a);
  Code
  Signal(a);
}
```

```
P2
{
  wait(f);
  wait( e);
  wait(g);
  Code
  Signal(f);
  Signal( e);
  Signal(g);
}
```

```
P3
{
  Wait(a);
  Wait( e);
  wait(d);
  wait(b);
  Code
  Signal(d);
  Signal(b);
}
```

```
P4
{
  Wait(b);
  Wait ( c);
  Code
}
```

```
P5
{
  Wait( g);
  Wait( d);
  wait( c);
  Code
  Signal( c);
}
```