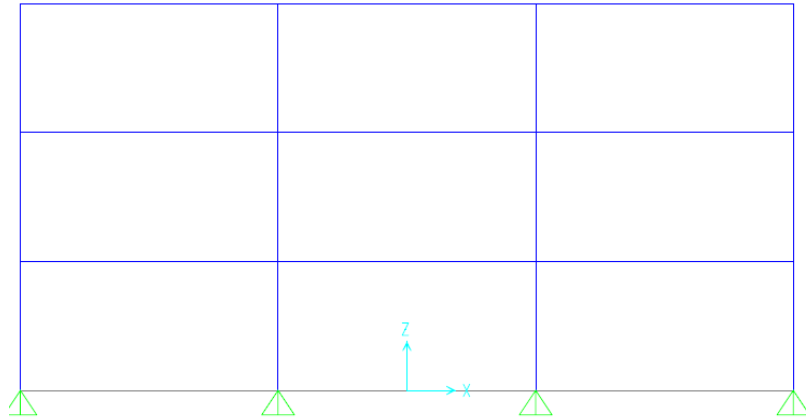


Examen Complément de Programmation

Exercice 1 (9p)

Donner l'organigramme et écrire un programme FORTRAN pour calculer la somme des inerties des poteaux dans chaque niveau du portique représenté ci-dessous.



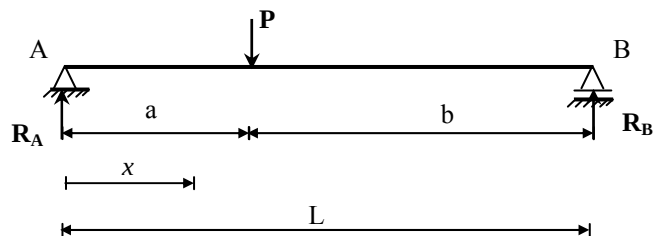
Exercice 2 (6p)

Ecrire un programme FORTRAN pour calculer le moment et l'effort tranchant d'une poutre isostatique soumise à une force concentrée P.

$$R_A = \frac{P(L-a)}{L} \quad ; \quad R_B = \frac{Pa}{L}$$

$$0 \leq x \leq a \quad M_x = R_A \cdot x \quad ; \quad T_x = R_A \quad ;$$

$$a \leq x \leq L \quad M_x = R_A \cdot x - P(x-a) \quad ; \quad T_x = \frac{P(L-a)}{L} - P$$



Exercice 3 (5p)

Corriger le programme suivant :

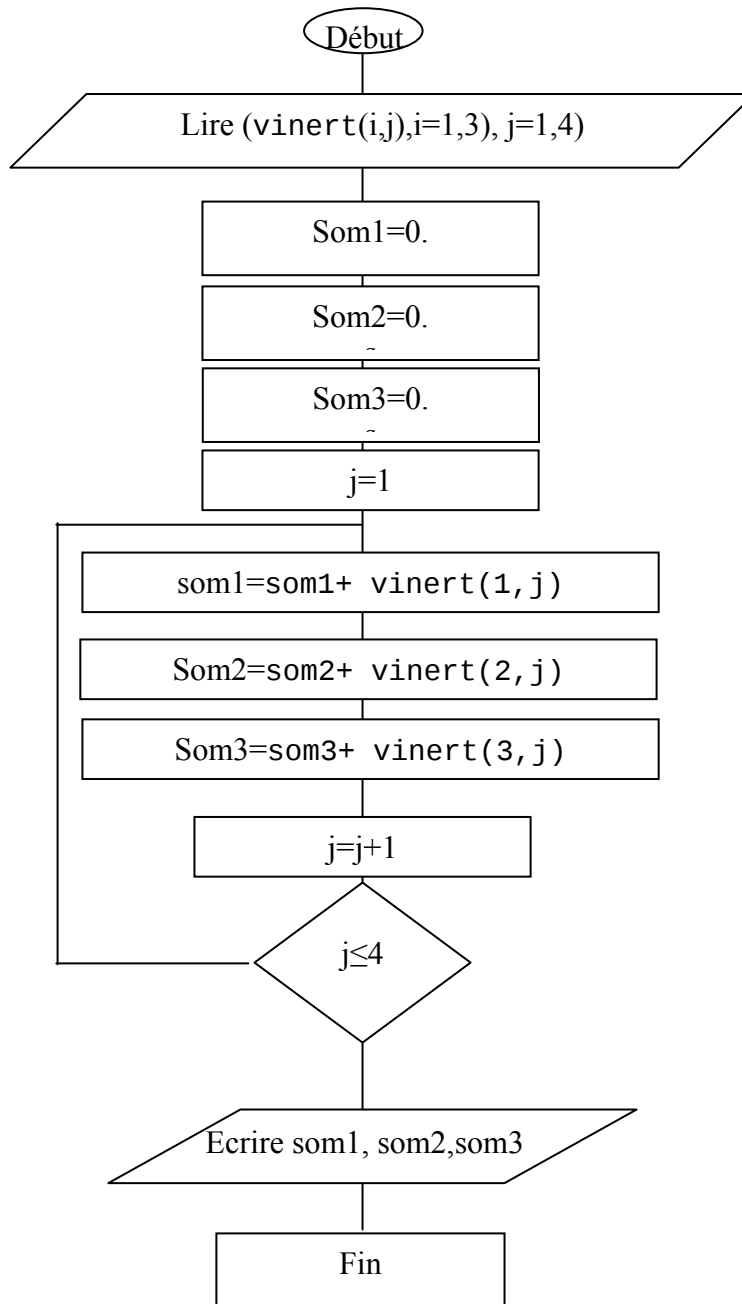
```
write(6,*) donner les valeur de a,b,c
read(5,*) a b c
call add(a,b,c,s,t)
write(6,*) s,t
end
subroutine add a,b,c,s
s=a+b
t=a+c
end
```

Exercice 2

```

    dimension vinert(3,4)
    do 10 i=1,3
10  read(*,*)(vinert(i,j),j=1,4)
    som1=0.
    som2=0.
    som3=0.
    do 20 j=1,4
        som1=som1+ vinert(1,j)
        som2=som2+ vinert(2,j)
        som3=som3+ vinert(3,j)
20  continue
    write(6,*) som1,som2,som3
    stop
    end

```



Exercise 2 (6Pts)

```
PROGRAM POUTRE
REAL P,L,a,b,R1,R2,X,SF,BM
PRINT*, 'ENTER CONCENTRATED LOAD,P'
READ*,P
PRINT*, 'ENTER A,B'
READ*,a,b
L=a+b
R1=(P*(L-a))/L
R2=(P*a)/L
PRINT*, 'LEFT REACTION,R1=',R1,'KN'
PRINT*, 'RIGHT REACTION,R2=',R2,'KN'
PRINT*, 'ENTER THE INTERVAL'
READ*,X
IF(X.LE.a)THEN
SF=R1
BM=R1*X
ELSE IF(X.GE.a.AND.X.LE.(A+B))THEN
SF=R1-P
BM=R1*X-(P*(X-a))
END IF
PRINT*, 'SHEAR FORCE AT',X,'(M)',SF,'KN'
PRINT*, 'BENDING MOMENT AT',X,'(M)',BM,'KN-M'
STOP
END
```

Exercise 2 (8p)

Exercise 3 (5p)

```
write(6,*) 'donner les valeur de a,b,c'
read(5,*) a,b,c
call add(a,b,c,s,t)
write(6,*) s,t
stop
end
subroutine add (a,b,c,s,t)
s=a+b
t=a+c
Return
end
```