

```

!-----
! Maxime ESCOURBIAC
! G1
! 16/01/2010
! TP4 Methode du gradient conjugue, de Fletcher-Reeves
!     Et Polak-Ribiere
!-----
! Programme principal:
! gc.f90 : recherche lineaire, methode de Fletcher, methode
!         de Polak ribiere
! fct.f90: Fonction de calcul de la fonction et de son gradient
! fonction.f90: subroutine de lecture/affichage de matrice
!-----

```

```

program tp4pp

```

```

    use fonction
    use fct
    use gc

```

```

    implicit none

```

```

!declaration de variables

```

```

real(8),dimension(:),allocatable :: x,y
integer :: n,i
integer :: ichoix,itermax

```

```

print *, "Nombre d'iteration maximum"
read *, itermax
print *, "-----choix de l'equation-----"
print *, "1) f(x,y)= 100(y-x^2)^2+(-x)^2"
print *, "2) f(x,y)=(x+y)^2+(2(x^2+y^2-1)-1/3)^2"
print *, "3) f3(x)"
print *, "4) f4(x)"
print *, "-----"

```

```

print *, "choix?"
read *, ichoix

```

```

select case (ichoix)

```

```

    case(1)
        n = 2
        allocate(x(n))
        allocate(y(n))
        x(1)= 0.d0
        x(2)= 0.d0
        y=x
    case(2)
        n = 2
        allocate(x(n))

```

```

        allocate(y(n))
        x(1)= sqrt(7.d0/6.d0)
        x(2)= 0.d0
        y=x
    case(3)
        print *, "quelle valeur de n?"
        read *, n
        allocate(x(n))
        allocate(y(n))
        x = 1.d0
        y = x
    case(4)
        print *, "quelle valeur de n?"
        read *, n
        n = n+1
        allocate(x(n)) !decalage car selon le poly il existe une valeur x0 jusqu'a xn.
        allocate(y(n))
        i = 1
        do while(i .lt. n)
            x(i)= -1.2d0
            x(i+1)= 1.d0
            i = i+2
        end do
        if(i .eq. n) x(n)=-1.2d0
        y = x
    end select

    print *, "Fletcher-Reeves :::"
    call fletcher_reeves(x,n,ichoix,itermax)
    call affich_vect(x,n)
    print *, "Polak-Ribiere :::"
    call polak_ribiere(y,n,ichoix,itermax)
    call affich_vect(y,n)
    call system("pause") !programmation sous windows

end program tp4pp

```