

Program Main

Implicit none

integer :: k,j,i,s

real(4),dimension(:),allocatable :: a,b,c,d,e

real(4),dimension(5,3) :: m

real(4),dimension(3,5) :: n

real(4) :: mn(3,3)

open(unit = 50, file = 'M.dat', status = 'old')

open(unit = 60, file = 'N.dat', status = 'old')

k = 5

allocate(a(k),b(k),c(k))

do i = 1,5

 read(50,*) a(i),b(i),c(i)

enddo

m(:,1)=a(:)

m(:,2)=b(:)

m(:,3)=c(:)

deallocate(a,b,c)

j = 3

allocate(a(j),b(j),c(j),d(j),e(j))

do s=1,3

 read(60,*) a(s),b(s),c(s),d(s),e(s)

enddo

n(:,1)=a(:)

n(:,2)=b(:)

n(:,3)=c(:)

n(:,4)=d(:)

n(:,5)=e(:)

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deallocate(a,b,c,d,e)

close(50)
close(60)

mn = matrix_multiply(m,n)
print*,mn

open(100,file = 'MN.dat',status = 'replace')

do i=1,3
    write(100,'MN.dat') (mn(i,j), j=1,3)
enddo

close(100)

End Program Main

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real(4) function matrix_multiply(m,n)

real(4), dimension(:) :: m,n
real(4), dimension(3,3) :: mn

integer :: i
do i=1,3
    mn(1,i)=dot_product(n(i,:),m(:,1))
enddo

do i=1,3
    mn(2,i)=dot_product(n(i,:),m(:,2))
enddo

do i=1,3
    mn(3,i)=dot_product(n(i,:),m(:,3)))
enddo

end function matrix_multiply

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MN.dat

416.7328	352.2436	409.7708
437.1935	317.0897	386.6881
384.0996	342.3783	385.1046