25

Name:	Kell	Grade:	/100
			130

- 1. Show what is displayed on the screen for the following code. Use the provided underscore characters as column locations. We will use the format layout of our compiler(g95), no control characters. (15 points)

 - b. Real :: x = -3.141592654 Write(*, 100) x 100 Format(3X, F7.5) $\frac{1}{1} = \frac{1}{2} = \frac{1}{3} = \frac{1}{4} = \frac{1}{5} = \frac{1}{6} = \frac{1}{7} = \frac{1}{8} = \frac{1}{8} = \frac{1}{9} = \frac{1}{10} = \frac{1}{$
 - c. Integer :: i = -2564Real :: x = 2.718Write(*, 100) i, x100 Format(4X, 'i = ',1X, I4, 'x = ',F7.4) $\frac{1}{1} = \frac{1}{2} = \frac{1}{3} = \frac{1}{4} = \frac{1}{5} = \frac{1}{6} = \frac{1}{7} = \frac{1}{8} = \frac{1}{9} = \frac{1}{10} = \frac{1$
- 2. Write the OPEN statements to open two files. Open one for input the other for output. Connect them to the files "inData.dat" and "outData.dat". Check to see that both files opened properly and if not report an error message and end the program. (10 points)

 OPEN (UNIT=22, FILE="InData.dat" STAT45= OLD;

 ACTION = READ', Jostat=err1

OPENCUNIT=44, EILE=Out Data dat "STATUS='UNKNOWN ACTION='URITES OSTAT= errz)

IF (evr1/=0.0B. evr2/=0) THEN

WRITEXXX)"error"

STOD

END IL

Exam II

(15 pts) You want to create your own Fortran SUBROUTINE definition that will display to the screen two $\frac{1}{5}$ For example, if x and y are real variables, equal to 3.1 and 4.2, the SUBROUTINE would display to the real values in the Cartesian coordinate format

(3.1, 4.2)

Write a complete SUBROUTINE definition called displayCart that performs this operation.

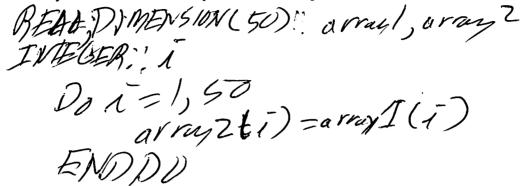
SUBACUTIVE displuy Cart (X) V)
REAL, INTENT(IN): X) V) ""
UNITE (4) X) "("X)" ")"
UNITE (4) X) "("X) ")" EVD SUBMONTINE

declare a integer array of size 30 called intNums declare a logical array of size 30 called boolVals declare a real array of size 30 called realNums (10 pts) Declare arrays and initialize values. 4.

Initialize all values in realNums to 0.0, all values in intNums to 0 and all values in boolVals to

AFAL, DIMENSION (Size): rail Nums=0.0 PNTEVER DIMENSION (USIZE): inthums=0. COCKL, DIMENSION (QSize): bas/Vals= FAVE INTELER, PHRINETER: 05120 = 30

5. (10 pts) Write code to transfer all the values in a real array of size 50 called array1 to the corresponding locations of a real array of size 50 called array2. Use a do loop and declare all variables used.



6. Write a piece of code that declares an array of characters called **Names**. There should be 10 **Names** that are 15 characters long each (write code for this). Write code that you would use to get a list of 10 names from the user. (10 points)

(HARACTER(len=15)))IMENGION(10): Numos
WRITE(*)*'Pleus a enton 10 Names'

Do I=1,0

BEAD(*)*Numos(i)

END DU

7. (10 pts) Write code to declare a two dimensional array of type INTEGER that has 10 rows and 10 columns. Assign values to the array using counting loops, where the values look like a multiplication table. i.e.

1	2	3	4	5	6	7	8	9	10	
2	4	6	8	10	12	14	16	18	20	
3	6	9	12	15	18	21	24	27	30	
4	8	12	16	20	24	28	32	36	40	
etc,						,				
I	VII	GE	Rol		ENS	1020	(10),	10),	ar	つ
IM	TEG B	ERS	in	رر					ar	
		DI	_	1.10	9	_				
		Du	, _	-/) / () [):	- 1	- */	<u> </u>	
			C		(1))/-		10		
		E	IVA	1) 1/	0					
	庄	ND	\mathcal{D}	0						

8. (30 pts) x! is defined as x factorial and is computed by calculating the product of all the values from x down to 1.

Some examples, 5! = 5x4x3x2x1 = 120; 2! = 2 and, by definition of this function 0! = 1.

Write a complete function name Factorial that implements this functionality. Your function should accept a single integer value and produce the resulting factorial answer. If any error occurs (the function is sent a negative value for input), your function should return -1.

INTEGER FUNCTION Factorial (n)
IMPLICIT NONE INTEGER, INTENT (IN): "IN IntI=GER: 1 tactorial=1 IF(n)=0) THEN DO L=1,1 Factorial = Factorial XI ENDDO FLSE Factorial = 1 ENDIF END FUNCTION

9. (20 pts) Write a Fortran SUBROUTINE called intSortArray. The subroutine is sent, on the parameter list, an array of INTEGERS called arr and an INTEGER called count. The code in the subroutine should sort the values in the array from low to high.

The layout / header to the Subroutine will look like:

SUBROUTINE intSortArray (arr, count)

! Your code goes here ,
TMPLICIT NONE
TNTEGER, DIMENSION ENTER (INDUI). av
IMPLICIT NONE INTEGER, DIMENSION COULT INTEGER, INTENT (IN) " count INTEGER: in top
INTEGER. i, i, top
Do i = 1 Count-1
Do t - 1 Count-1
TE INVIOLO) > arr() + 1) / 1/E/V
arr(j+1)=tmp
ENDIF
ENDIDO
END PO

END SUBROUTINE

e e

5 X A