NEW PROGRAMS FOR THE

fx-CP400

THE HUNGARIAN ALGORITHM

These programs provide solutions to "matching/assignment" problems using the Hungarian Algorithm.
General Mathematics – Area of Study 2 – Discrete mathematics – Networks and decision mathematics.

HunAmin: a program to find the assignment of resources to tasks that minimises "cost"

HunAmax: a program to find the assignment of resources to tasks that maximises "output"

INPUT: Assignment data is entered as an $n \times m$ (square or non-square) matrix

OUTPUT: Minimum or maximum "cost/output"

ADDITIONAL OUTPUT: TransM – the transformed matrix – ResultM – matrix showing optimal assignment

Question 36 – 2024 VCE (NHT) General Mathematics Examination 1

Four students, Peggy, Quincy, Radley and Sarah, are grouped together to complete a project. The project is in four parts, labelled W, X, Y and Z. Each student must complete one part of the project.

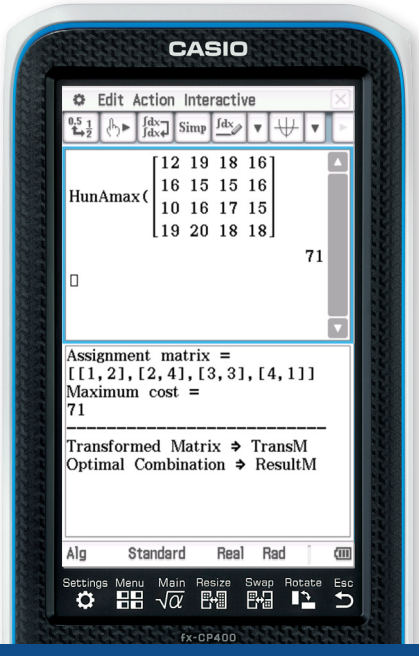
The table below shows each student's estimate of the score they will receive if they complete each section.

	Peggy	Quincy	Radley	Sarah
W	12	19	18	16
X	16	15	15	16
Y	10	16	17	15
Z	19	20	18	18

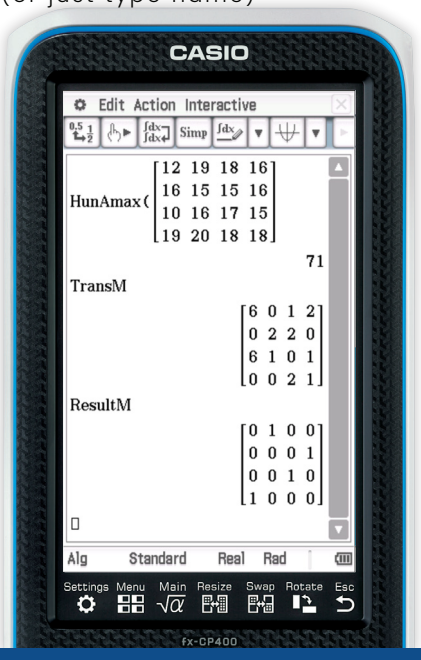
Based on the estimates, which allocation of project parts will maximise the students' group score on the project?

In **Main**, select **HunAmax** from **Variable Manager** (or just type name)

Enter the assignment matrix – preceded by a left bracket – then press **EXE**



For additional output select **TransM** and/or **ResultM** from the Variable Manager (or just type name)



BCD - SOLVE FOR n

These programs solve "find number of trials" problems that involve the binomial (cumulative) distribution.
Mathematical Methods – Area of Study 4 – Data analysis, probability and statistics

InvBinNL: for X~Bi(n,p), find n such that Pr$(X \leq x) = k$, where p, x and k are known

InvBinNR: for X~Bi(n,p), find n such that Pr$(X \geq x) = k$, where p, x and k are known

INPUT: (k, p, x) as defined above

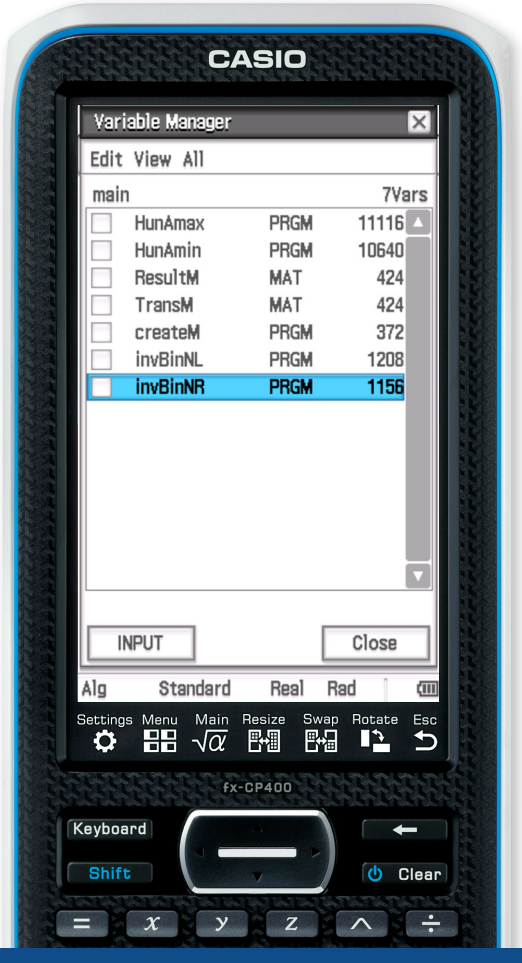
OUTPUT: n value(s)
corresponding probabilty (closest to k)

Question 17 – 2021 VCE Mathematical Methods Examination 2

A discrete random variable X has a binomial distribution with a probability of success of $p = 0.1$ for n trials, where $n > 2$.
If the probability of obtaining at least two successes after n trials is at least 0.5, then the smallest possible value of n is

A. 15
B. 16
C. 17
D. 18
E. 19

In **Main**, select **InvBinNR** from **Variable Manager** (or just type name)



In parentheses, enter the inputs (k, p, x) as defined above, then press **EXE**

Programs are available to download from Casio Education Australia, scan the QR code for more
Visit casioeducation.com.au for more ClassPad II resources or contact edusupport@shriro.com.au

createM

This program creates an $n \times m$ matrix, given a rule for its elements in terms of i and j.

General Mathematics – Area of Study 2 – Discrete mathematics – Matrices and their application

createM: a program that creates an $n \times m$ matrix based on a functional rule $f(i,j)$ for elements a_{ij}

INPUT: $(f(i,j), n, m)$ - note the rule $f(i,j)$ must be in terms of row i and column j.

OUTPUT: The $n \times m$ matrix with elements a_{ij}

Question 29 – 2023 VCE General Mathematics Examination 1

Matrix K is a 3×2 matrix.

The elements of K are determined by the rule $k_{ij} = (i - j)^2$.

Matrix K is

A. $\begin{bmatrix} 0 & 1 & -2 \\ 1 & 0 & -1 \end{bmatrix}$

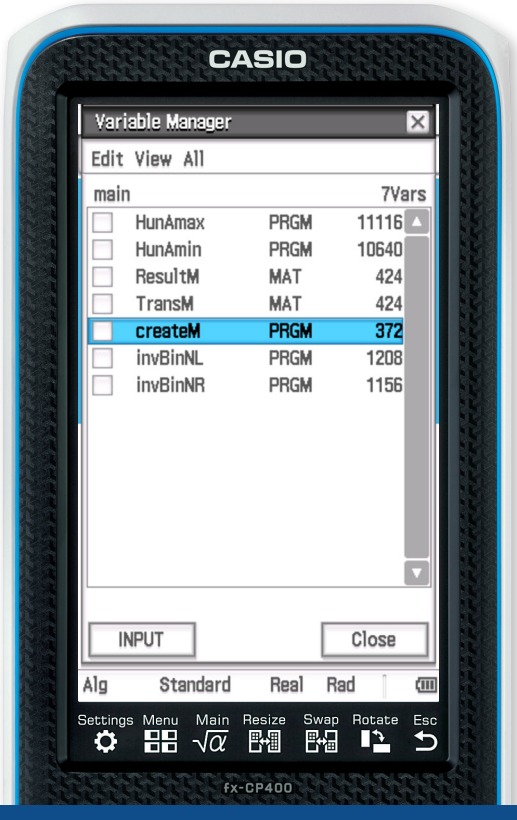
B. $\begin{bmatrix} 0 & 1 & 4 \\ 1 & 0 & 1 \end{bmatrix}$

C. $\begin{bmatrix} 0 & -1 \\ 1 & 0 \\ 4 & 1 \end{bmatrix}$

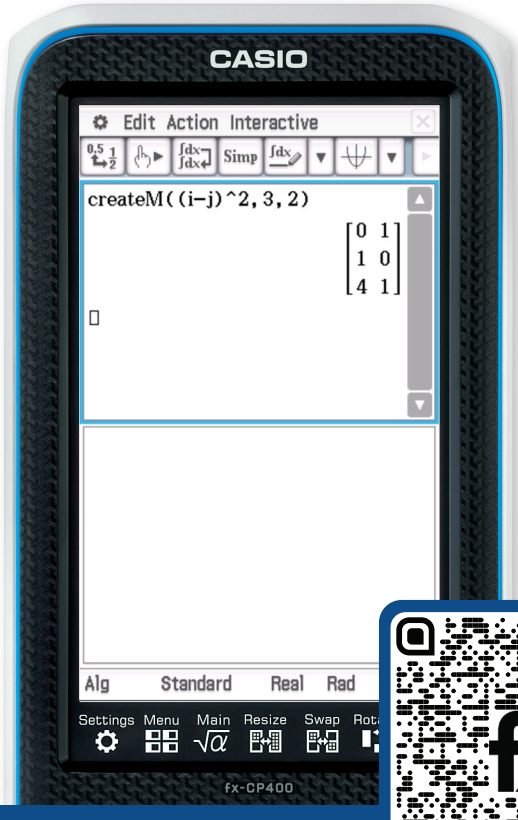
D. $\begin{bmatrix} 0 & 1 \\ 1 & 0 \\ 2 & 1 \end{bmatrix}$

E. $\begin{bmatrix} 0 & 1 \\ 1 & 0 \\ 4 & 1 \end{bmatrix}$

In **Main**, select **createM** from **Variable Manager** (or just type program name)

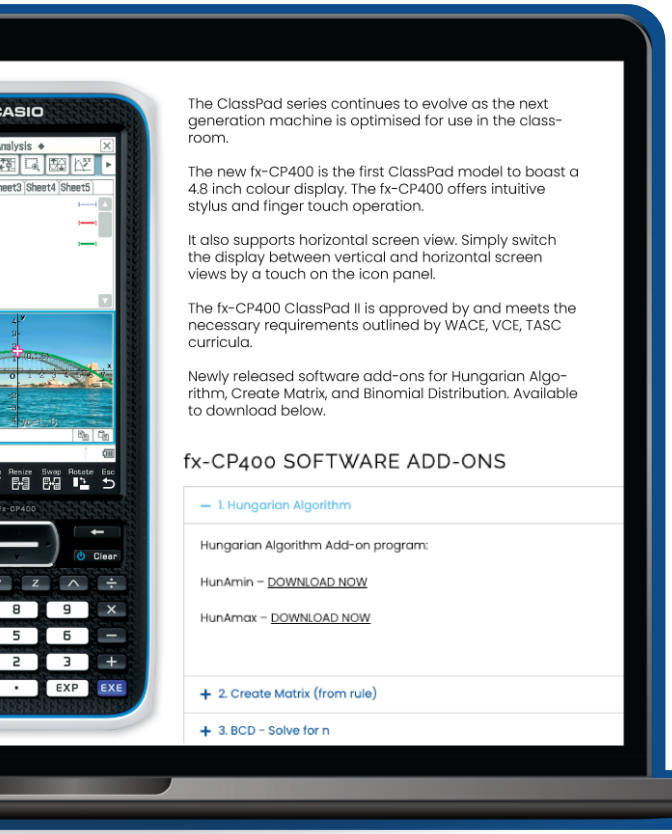


Enter $(f(i,j), n, m)$ as described above then press **EXE**



HOW TO DOWNLOAD AND INSTALL

All programs are available to download via the Casio Education Australia website >>
casioeducation.com.au/fx-cp400-classpad-ii-cas-calculator/



1. How to install in your ClassPad emulator (on PC or Mac)

Double click the xcp file for each program that you wish to use.

The corresponding program will be saved to the Variable Manager of your ClassPad emulator and can then be accessed via the Main or Program app.

2. How to transfer the programs to your handheld device

Connect your handheld to your PC or Mac via the supplied USB cable

On the handheld, choose Connection Mode – USB Flash

Drag and drop the xcp file(s) onto the ClassPad II's USB Drive on your computer

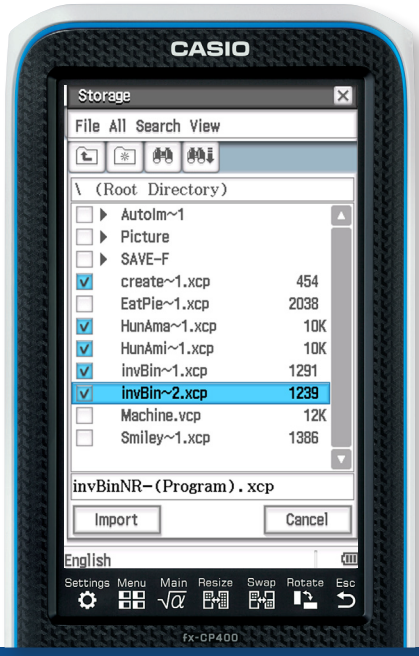
Close the USB Drive and eject the ClassPad from your computer

How to import the programs to your fx-CP400 ClassPad II's main memory:

Open the System menu on your fx-CP400 ClassPad II

Select **View Storage & Import** and tap **Select**

Tick the programs you require and tap **Import**



Select the main folder and tap **OK**