

## JUNIOR ASSESSMENT PROGRAM

<b>Faculty:</b> HSIE	<b>Subject:</b> Information and Software Technology	<b>Topic:</b> Artificial Intelligence, Modelling and Simulation
<b>Teacher:</b> Miss Green		<b>Student:</b>
<b>Task:</b> Complete Design Project (see Attached Instructions) <ol style="list-style-type: none"> <li>a. All tasks <b>MUST</b> be answered.</li> <li>b. Name project '<b>AI_Design Project_YourName</b>'.</li> <li>c. The task <b>MUST</b> be saved electronically in your <b>OneDrive Folder</b> <b>AND</b> submitted via the class <b>Google Classroom</b> and labelled appropriately.</li> </ol>		
<b>Outcomes/Content Assessed:</b> 5.2.2 designs, produces and evaluates appropriate solutions to a range of challenging problems. 5.3.2 acquires and manipulates data and information in an ethical manner. 5.5.2 communicates ideas, processes and solutions to a targeted audience		
<b>Weighting(s):</b> 35% of your yearly mark		
<b>Date Given:</b> Tuesday 16 <sup>th</sup> March 2021, Week 8 Term 1		<b>Date of Completion:</b> Friday 30 <sup>th</sup> April 2021, Week 2 Term 2
<b>Penalties:</b> As per ROSA booklet		
<b>Please Note:</b> that plagiarism, the using of the work of others without acknowledgement, will incur serious penalties and may result in zero award. Any cheating will also incur penalties.		

## DESIGN PROJECT

You have just been employed as the manager of your favourite band (musician or recording artist). The band members are currently in Los Angeles and have decided that they want to go on a 2 week tour of Australia. The tour will comprise of the following;

<i>Sydney</i>	<i>Adelaide</i>	<i>Melbourne</i>	<i>Hobart</i>
<i>Brisbane</i>	<i>Canberra</i>	<i>Perth</i>	<i>Newcastle</i>

### Task Requirements

1. A spreadsheet will be needed to manage the running costs of the tour and to forecast potential profits or losses. Some expenses are already known to you, including;

• Insurance	\$50,000	• Road crew	\$50,000	
• Equipment transport	\$80,000	• Manager's wages	\$20,000	• Miscellaneous expenses
				\$10,000

You must research and calculate the cost associated with **all** required activities and expenses of the tour. These include; meal allowances, accommodation, transport costs and any side entertainment activities your tour shall undertake (e.g. a trip to an amusement park). All tour costs must be multiplied by the number of band members in your band.

2. It is a good idea to sketch a simple pen and paper model of the spreadsheet that will keep track of your band's budget before creating your electronic version in order to plan what it will look like. Your spreadsheet should be designed so that you can make a range of calculations about the financial success of the tour.
  - Tickets will sell for \$150.
  - 25% of this will be paid to venues and promoters
  - It is expected that the tour will be completely sold out, generating 80,000 tickets sales in total
  - Based on previous tour experience, assume that 1 in every 5 concert goers will buy a T-shirt and 1 in 10 will buy a CD. Each T-shirt will return a profit of \$18 and \$15 made off every CD.

## **TASK REQUIREMENTS**

1. Implement your design using a spreadsheet program (with formulas etc.) based on the information provided on front page of assessment.
2. Produce a Pie-graph which displays all your expenses as a percentage of the total tour costs.
3. Your spreadsheet should be able to answer the following questions;
  - a. How many tickets, CDs, and T-shirts will be needed to be sold in order to cover expenses?
  - b. How many tickets will be needed to be sold in order to earn the band \$10 000 profit for the tour?
  - c. What if the band's percentage of ticket takings was reduced from 75% to 65%? How would this affect the number of ticket sales needed to cover expenses?

# Artificial Intelligence Spreadsheet Assessment Steps to Follow

Input all Tour Costs, Bases Expenses and information regarding Merchandise prices.

Format spreadsheet i.e. Headings, sizes of columns and rows etc.

\* Create your totals for your expenses

Tour Costs

Base Expenses

➤ Merchandise Sales

T-Shirts (look at the hint sheet)

CDs (looks at then hint sheet)

Tickets (look at the hint sheet)

Work out how much the Promoter should be paid (look at the hint sheet)

Work our your profit total after the promoter should be paid. (look at the hint sheet)

Create your Running Profits (look at the hint sheet )

Work out your Actual Profit (look at the hint sheet )

Produce a pie - graph displaying all your expenses as a percentage of the total tour costs.

Create a formula to work out how many Tickets, CDs, T-shirts will needed to be sold in order to cover the expenses from the Tour Costs and Base Expenses. Show the answer and formula in your spreadsheet.

Create a formula to work out how many Tickets will be needed to be sold in order to earn the band/musician a \$10,000 profit for the tour.

Create a formula that could show how much the profit for the band would be if their share of the ticket sales was reduced from 75% to 65%

Work out from your formula in Number 11, how many tickets would need to be sold in order to cover all the musician/band's expenses.

## Yr 10 Artificial Intelligence, Modeling and Simulation Assessment Marking Sheet

**5.2.2 Designs, produces and evaluates appropriate solutions to a range of challenging problems.**

**5.2.2 Total:**  
**120**

<b>N/A</b>	<b>Limited</b>	<b>Basic</b>	<b>Sound</b>	<b>High</b>	<b>Outstanding</b>
0	1 - 4	5 - 8	9 - 14	15 - 17	18 - 20

1. How many tickets, CDs, and T-shirts will be needed to be sold in order to cover expenses?

<b>N/A</b>	<b>Limited</b>	<b>Basic</b>	<b>Sound</b>	<b>High</b>	<b>Outstanding</b>
0	1	2	3	4	5

2. How many tickets will be needed to be sold in order to earn the band \$10 000 profit for the tour?

<b>N/A</b>	<b>Limited</b>	<b>Basic</b>	<b>Sound</b>	<b>High</b>	<b>Outstanding</b>
0	1	2	3	4	5

3. What if the band's percentage of ticket takings was reduced from 75% to 65%?  
How would this affect the number of ticket sales needed to cover expenses?

<b>N/A</b>	<b>Limited</b>	<b>Basic</b>	<b>Sound</b>	<b>High</b>	<b>Outstanding</b>
0	1	2	3	4	5

4. Problem Solving through completion of project

<b>N/A</b>	<b>Limited</b>	<b>Basic</b>	<b>Sound</b>	<b>High</b>	<b>Outstanding</b>
0	1	2	3	4	5

**5.3.2 Total:**  
**120**

**5.3.2 Acquires and manipulates data and information in an ethical manner**

<b>N/A</b>	<b>Limited</b>	<b>Basic</b>	<b>Sound</b>	<b>High</b>	<b>Outstanding</b>
0	1 - 4	5 - 8	9 - 14	15 - 17	18 - 20

<b><u>Itinerary / Costs</u></b>									
							2 Week Tour Period		Yes/No
	Sydney	Brisbane	Adelaide	Canberra	Melbourne	Perth	Hobart	Newcastle	
Airfares									
• England to Australia (return x2)									
• Domestic									
Accommodation									
Car Hire									
Meals									
Other Expenses									
Vineyard Visit (x1)									
Amusement Park Visit (x1)									
Harbour Bridge Climb (x2)									

**5.5.2 Communicates ideas, processes and solutions to a targeted audience**

<b>N/A</b>	<b>Limited</b>	<b>Basic</b>	<b>Sound</b>	<b>High</b>	<b>Outstanding</b>
<b>0</b>	<b>1 - 4</b>	<b>5 - 8</b>	<b>9 - 14</b>	<b>15 - 17</b>	<b>18 - 20</b>

1. Pie Graph of expenses as a percentage of a total tour costs

<b>N/A</b>	<b>Limited</b>	<b>Basic</b>	<b>Sound</b>	<b>High</b>	<b>Outstanding</b>
0	1	2	3	4	5

2. Spreadsheet Layout

<b>N/A</b>	<b>Limited</b>	<b>Basic</b>	<b>Sound</b>	<b>High</b>	<b>Outstanding</b>
0	1	2	3	4	5

3. Spreadsheet Efficiency (How well it works as a whole)

<b>N/A</b>	<b>Limited</b>	<b>Basic</b>	<b>Sound</b>	<b>High</b>	<b>Outstanding</b>
0	1	2	3	4	5

4. Formulas (how many, and how sophisticated)

<b>N/A</b>	<b>Limited</b>	<b>Basic</b>	<b>Sound</b>	<b>High</b>	<b>Outstanding</b>
0	1	2	3	4	5

Total Base Expenses	Insurance + Equip Transport + Road Crew + Manager's Wage + Band+ Mis Expenses = \$50,000+ \$80,000+ \$50,000+ \$20,000+ \$10,000 = \$210,000	
Total Other Expenses	As Above	
Total Ticket Sales	Ticket Sales = Ticket Price x Amount of Ticket Sales Ticket Sales = \$150.00 x 80,000 <b><u>Ticket Sales = \$12,000,000</u></b>	
Amount Paid to Promoters	Amount Paid to Promoters = % of Ticket Sales x Ticket Sales = 25% x 12,000,000 = 0.25 x 12,000,000 <b><u>Amount Paid to Promoters = \$3,000,000</u></b>	
Profits After Promoters Paid	Profits After Promoters Paid = Ticket Sales – Amount Paid to Promoters = 12,000,000 – 3,000,000 <b><u>Profits After Promoters Paid = \$9,000,000</u></b>	
CD Sales	CD Sales = Profit from Sales x (Amount of Tickets Sold / What is 1 in 10 of 12,000) = 15 x (80,000 / 10) = 15 x 8,000 <b><u>CD Sales = \$120,000</u></b>	
T-Shirt Sales	T-Shirt Sales = Profit from Sales x (Amount of Tickets Sold / What is 1 in 5 of 12,000) = (18 x 80,000 / 5) = 18 x 16,000 <b><u>T-Shirt Sales = \$288,000</u></b>	
Running Profit	Running Profit = Profit after Promoters Paid + CD Sales + T-Shirt Sales = 9,000,000 + 120,000+ 288,000 <b><u>Running Profit = \$9,408,000</u></b>	
Actual Profit	ACTUAL PROFIT = Running Profit – (Base Expenses + Other Expenses) = 9,408,000 – (210,000 + Other Expenses)	