

Computer Science Transition Work

Year 12 into Year 13

Name:

Date:

Class:

NEA Programming Project

To support the development of your Year 13 NEA Programming Project, you should use your time before September to complete the following tasks.

Task 1

Stakeholder Research

Clearly identify who your project stakeholders are and complete some research to help support your project.

Produce evidence for each of these questions:

1	Who are your stakeholders?
2	How do you know them/what is their connect to you?
3	How will you communicate with your stakeholders?
4	What information must you gain from your stakeholders?
5	How will you use their feedback?

Task 2

Stakeholder Interview

Plan and conduct the information gathering from your stakeholders. This could be completed as interviews, focus groups, surveys, questionnaires, or observations, but it must take place for you to use the findings in your project.

1	List the questions you need to ask:
2	List the people or groups you need to see:
3	List the dates the meeting will take place:
4	State your findings:

Task 3

Programming Project – IDE

You must choose what integrated development environment (IDE) you will be using to develop your NEA Project. To familiarise yourself with your chosen IDE, research and complete all the following tasks.

Chosen Project IDE

1	What IDE are you planning to use to complete your NEA Programming Project?
2	Why will this IDE be suitable?
3	State three features of the IDE that will make it suitable:

Task 4

Research your chosen IDE and state how the following can be achieved.

Using example code, or tutorials, give examples of how these programming techniques could be achieved.

Show annotated example code of: **2.2.1 Programming techniques**

(a)	Programming constructs: sequence, iteration, branching.
(b)	Recursion, how it can be used and compares to an iterative approach.
(c)	Global and local variables.

(d)	Modularity, functions and procedures, parameter passing by value and by reference.
(e)	Use of an IDE to develop/debug a program.
(f)	Use of object-oriented techniques.

Programming Challenge

Classification

A simple classification system asks a series of **Yes/No** questions in order to work out what type of animal is being looked at.

For example:

- Does it have 4 legs?
- Does it eat meat?
- Does it have stripes?

These systems can often be drawn using a “**tree**” structure, and can be the basis of an “**Expert System**”

Task 5

Carry out some simple research on ***classification trees***, (decision trees/expert systems), then write a program to help the user decide between the following:

horse, cow, sheep, pig, dog, cat, lion, tiger, whale, dolphin, seal,
penguin, ostrich, sparrow, spider, ant, bee, wasp, termite,
octopus, squid

Is there a better way to do this than using **101 IF . . . ELSE . . . END IFs**?

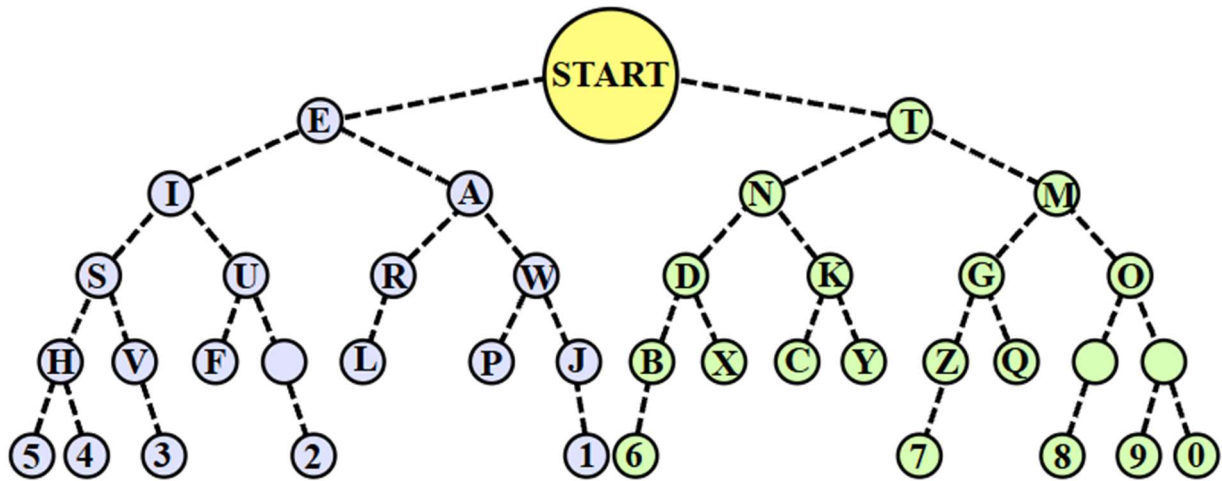
Present your research as a four-slide presentation that include an:

- Introduction
- an explanation
- examples
- advantages/disadvantages.

Task 6

Develop your classification system so that it could be used to decipher Morse Code.

Use your knowledge of classification trees and this Morse Code tree, to create a program to decode Morse Code messages.



Dot moves to the left : Dash moves to the right

Test your program with this message:

-- - . . / - / . . . - / --- .. / ---

Alternate view: {one letter per cell; "/" = new word}

--	.	...	-	.	.	/	-		.	/	.	.	-	/
--	...	/	.	.	--	.	.	.	-	--	..	.	.	