T1A1_Workbook Assignment

Qestion 1

Q1 Research the development of the internet from 1980 to today. You must describe at least FIVE key events in the development of the internet. You can refer to events, people of significance, or technologies and how they have changed over time. 300 - 500

- Term1 Week1 Activity 4
    1. Arpanet
    2. Routers/modems
    3. emails
    4. Internet provider companies
    5. phones? (internet in your pocket)

Q2 Define the features of the following technologies that are essential in terms of the development of the internet:

- Term1 Week1 Activity 4
- packets
- IP addresses (IPv4 and IPv6)
- routers and routing
- domains and DNS

Explain how each technology has contributed to the development of the internet. 50 - 100 words per dot point

Q3 Define the features of the following technologies that are essential in terms of the development of the internet:

- Term1 Week1 Activity 4
- TCP
- HTTP and HTTPS
- web browsers (requests, rendering and developer tools)

Explain how each technology has contributed to the development of client and server communication over the internet (50 - 150 words for each technology) 150 - 300 words per dot point

Q4 Identify THREE data structures used in the Ruby programming language and explain the reasons for using each. 50 - 100 words on each data structure

> Term 1 week 4

> A way to organise data within code. (Arrays, Hashes, Stacks)

Q5 Describe the features of interpreters and compilers and how they are different. 100 - 200 words on each way code is executed

> Interpreters go line by line and change it into machine language

> Compilers change the entire document at once

Q6 Identify TWO commonly used programming languages and explain the benefits and drawbacks of each. 200 - 400 words on each language

> HTML and RUBY ---- Python ----- Javascript HTML is considered to not be a programming language

Q7 Identify TWO ethical issues from the areas below and discuss the extent to which an IT professional is ethically responsible in terms of the issue.

List of topics containing ethical issues:

- access to a user's personal information (medical, family, financial, personal attributes such as sexuality, religion, or beliefs)
- intellectual property, copyright, and acknowledgement.
- criminal acts such as theft, fraud, trafficking and distribution of prohibited substances, terrorism
- GPS tracking data and other types of metadata, MAC addresses, hardware fingerprints
- freedom of thought, conscience, speech and the media
- aggressive sales and marketing practices designed to mislead and deceive consumers
- trading of shares on the stock exchange OR crypto-currencies

For each ethical issue identify a source of legal information relating to the ethical issue and discuss whether the law is helpful in assisting a developer to act in an ethical way. (Word count guide: 200 words max)

Conduct research into a case study of ONE of the ethical issues you have chosen discuss how an ethical IT professional should respond to the case study and how they might mitigate or prevent ethical breaches. (Word count guide: 400 - 600 words) 200 - 400 words for each ethical issue

> Pick two ethical issues from above and write 200 words and the ethical responsibilities of an IT worker, and try and link legal documents 2 x 200

> For one of them reseach a case study and do an additional 400 words 1 + 400

Q8 Explain control flow, using an example from the Ruby programming language 100

> Term 1 week 4 Controlling logic within code Example: If else. While loops.

Q9 Explain type coercion 100

> Changing one data type to another

> Example String = "123" into an interger

> > > Interger(String) + 2

Q10 Explain data types, using examples 100

> > > Strings, integers, boolean

Q11 Here's the problem: "There is a restaurant serving a variety of food. The customers want to be able to buy food of their choice. All the staff just quit, how can you build an app to replace them?"

- Identify the classes(objects/robots) you would use to solve the problem

> > > class/robot : Head Chef

- Write a short explanation of why you would use the classes you have identified N/A

> > > If you coded the class Head Chef, why did you code him?? what does he do? what is his purpose? why is he important to making this app/kitchen run?

> > > his job would be: Boss the other chefs to make the food is cooked, remember the recipes, make sure quality is 5 stars.

> > > Other classes include: waiter, cash taker, cleaner, dishwasher, sous chef, pastie chef

Q12 Identify and explain the error in the code snippet below that is preventing correct execution of the program 100

> > > working code:

celsius = gets.chomp.to_i p celsius fahrenheit = (celsius * 9 / 5) + 32 print "The result is: " print fahrenheit print "."

> > > only difference: .chomp.to_i

> > > Explain why ".chomp.to_i" is what fixes it

Q13 The code snippet below looks for the first two elements that are out of order and swaps them; however, it is not producing the correct results. Rewrite the code so that it works correctly. N/A

inititate variables

arr = [5,22,29,39,19,51,78,96,84] i = 0

create a while loop. that loops through all the array indexs until it finds one thats less then the next index

while (i < arr.size - 1 and arr[i] < arr[i + 1])

```
# The code below, increases arrayindex by 1 everytime while makes 1 step
i = i + 1
```

end

#Swap the current index with the one above it, and vice versa

arr[i] = arr[i +1]

arr[i + 1] = arr[i]

arr[i], arr[i +1] = arr[i + 1], arr[i]

p arr

Q14 Demonstrate your algorithmic thinking through completing the following two tasks, in order:

1. Create a flowchart to outline the steps for listing all prime numbers between 1 and 100 (inclusive). Your flowchart should make use of standard conventions for flowcharts to indicate processes, tasks, actions, or operations

> Week 4 learning activity 6

2. Write pseudocode for the process outlined in your flowchart N/A

Q15 Write pseudocode OR Ruby code for the following problem: You have access to two variables: raining (boolean) and temperature (integer). If it's raining and the temperature is less than 15 degrees, print to the screen "It's wet and cold", if it is less than 15 but not raining print "It's not raining but cold". If it's greater than or equal to 15 but not raining print "It's warm but not raining", and otherwise tell them "It's warm and raining". N/A

```
if raining == true
    if temperature < 15
        #do this
        puts "It's wet and cold"
    elsif temperature > 15
        #do this
        puts "It's warm and raining"
    end
else
    if temperature < 15
        #do this
        puts "It's not raining but cold"
    elsif temperature > 15
        #do this
        puts "It's warm but not raining"
    end
end
```

Q16 ACME Corporation are hiring a new junior developer, as part of their hiring criteria they've created a "coding skill score" based on the specific competencies they require for this role; the more important the skill is for ACME corp, the more points it contributes to the "coding skill score" The skills are weighted as follows:

- Python (1)
- Ruby (2)
- Bash (4)
- Git (8)
- HTML (16)
- TDD (32)
- CSS (64)
- JavaScript (128) Write a program that allows a user to input their skills and then tells them

a) Their overall "coding skill score"

> Get input from the user - ask them what skills they know out of the ones above - and then tally up the numbers and display that number on the screen

b) Skills they may want to learn, and how much each one would improve their score