T1A1 - Workbook

Submit Assignment

Due Sep 30 by 10:00 **Points** 103.5 **Submitting** a file upload **File Types** md and pdf
Available Aug 23 at 9:00 - Feb 7, 2020 at 23:59 6 months

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

8. Explain control flow, using an example from the Ruby programming language *(100 words)*
9. Explain type coercion *(100 words)*
10. Explain data types, using examples (*100 words*)
11. 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 you would use to solve the problem
    - Write a short explanation of why you would use the classes you have identified
12. Identify and explain the error in the code that is preventing correct execution of the program *(100 words)*

```
celsius = gets
fahrenheit = (celsius * 9 / 5) + 32
print "The result is: "
print fahrenheit
puts "."
```

13. The following code 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.

```
arr = [5, 22, 29, 39, 19, 51, 78, 96, 84]
i = 0
while (i < arr.size - 1 and arr[i] < arr[i + 1])
        i = i + 1 end
puts i
    arr[i] = arr[i + 1]
    arr[i + 1] = arr[i]
```

14. Demonstrate your algorithmic thinking through completing the following two tasks, in order:
    i. 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

A1 - Workbook - Term 1

Criteria	Ratings					Pts
Q1: **Describes** key events in the development of the internet from the 1980s to today	**6.0 to >5.0 pts** **HD** **describes** in *extensive* detail key events, people and/or technologies that are relevant to the development of the internet in the specified period	**5.0 to >4.0 pts** **D** **describes** in *high detail* events, people and/or technologies relevant to the development of the internet in the specified period	**4.0 to >3.0 pts** **CR** **describes** in *detail* key events, people and/or technologies relevant to the development of the internet in the specified period	**3.0 to >2.0 pts** **P** **describes** in *general terms* the development of the internet over the specified period OR makes general statements that are relevant to the development of the internet and the period specified	**2.0 to >0 pts** **F** provides a limited response which is *insufficient* in *detail*, *length* or *not relevant* to the question asked.	6.0 pts
Q2: **Defines** the features of at least THREE technologies and **explains** their relevance to the development of the internet.	**6.0 to >5.0 pts** **HD** **defines** the features of the technology correctly and provides a *thorough* **explanation** about how the technology is relevant to the development of the internet.	**5.0 to >4.0 pts** **D** **defines** the features of the technology correctly and provides an **explanation** about how the technology is relevant to the development of the internet.	**4.0 to >3.0 pts** **CR** **defines** the features of the technology correctly and provides *some* **explanation** about how the technology is relevant to the development of the internet.	**3.0 to >2.0 pts** **P** **defines** the features of the technology correctly and provides *general statements* about how the technology is relevant to the development of the internet.	**2.0 to >0 pts** **F** provides a limited definition which may include correct and/or incorrect features may or may not include supporting statements about the development of the internet, or statements about the technology which are not relevant to the development of the internet.	6.0 pts
Q3: **Defines** the key features of technologies and **explains** their relevance to the development of client and server communication over the internet.	**6.0 to >5.0 pts** **HD** **defines** the features of the technology correctly and provides a *thorough* **explanation** about how the technology is relevant to the development of client and server communication over the internet.	**5.0 to >4.0 pts** **D** **defines** the features of the technology correctly and provides an **explanation** about how the technology is relevant to the development of client and server communication over the internet.	**4.0 to >3.0 pts** **CR** **defines** the features of the technology correctly and provides *some* **explanation** about how the technology is relevant to the development of client and server communication over the internet.	**3.0 to >2.0 pts** **P** **defines** the features of the technology correctly and provides *general statements* about how the technology is relevant to the development of client and server communication over the internet.	**2.0 to >0 pts** **F** provides a **limited** **definition** which may include correct and/or incorrect features may or may not include supporting statements about the development of the internet, or statements about the technology which are not relevant to the development of client and server communication over the internet.	6.0 pts
Q4: **Identify** THREE data structures and **explain** why they are used in the specified language.	**6.0 to >5.0 pts** **HD** **Identifies** a data structure and provides a thorough **explanation** of what it is used for in the specified language.	**5.0 to >4.0 pts** **D** Identifies a data structure and provides an explanation of what it is used for in the specified language.	**4.0 to >3.0 pts** **CR** Identifies a data structure and provides some explanation of what it is used for in the specified language.	**3.0 to >2.0 pts** **P** Identifies a data structure and provides general statements about what it is used for in the specified language.	**2.0 to >0 pts** **F** may or may not identify a data structure and provides general statements about the specified language.	6.0 pts

Criteria	Ratings					Pts
Q5: **Identify** TWO ways in which code is executed and **explain** how they are different.	**6.0 to >5.0 pts** **HD** Identifies TWO ways in which code is executed and provides a thorough explanation about how they are different.	**5.0 to >4.0 pts** **D** Identifies TWO ways in which code is executed and provides an explanation about how they are different.	**4.0 to >3.0 pts** **CR** Identifies TWO ways in which code is executed and provides a some explanation about how they are different.	**3.0 to >2.0 pts** **P** Identifies TWO ways in which code is executed and provides general statements about them which may or may not indicate how they are different.	**2.0 to >0 pts** **F** May or may not identify ways or a way in which code is executed with little or no statement about how code is executed.	6.0 pts
Q6: **Identify** at least TWO commonly used programming languages and **explain** the benefits and drawbacks of each.	**6.0 to >5.0 pts** **HD** **Identifies** TWO commonly used programming languages and provides a thorough **explanation** about the benefits and drawbacks of each.	**5.0 to >4.0 pts** **D** **Identifies** TWO commonly used programming languages and provides an **explanation** about the benefits and drawbacks of each.	**4.0 to >3.0 pts** **CR** **Identifies** TWO commonly used programming languages and provides some **explanation** about the benefits and drawbacks of each.	**3.0 to >2.0 pts** **P** **Identifies** TWO commonly used programming languages and provides general statements about each.	**2.0 to >0 pts** **F** May or may not identify a programming language(s) and provides little or no statement about them.	6.0 pts
Q7(i): **Identifies** TWO ethical issues and **discusses** **the extent** to which they are responsible in terms of the issues in their role as an IT professional.	**6.0 to >5.0 pts** **HD** **Identifies** a specific ethical issue and provides coherent arguments about the extent to which an IT professional is responsible for the issue.	**5.0 to >4.0 pts** **D** **Identifies** a specific ethical issue and provides sound arguments about the extent to which an IT professional is responsible for the issue.	**4.0 to >3.0 pts** **CR** **Identifies** a specific ethical issue and provides some arguments about the extent to which an IT professional is responsible for the issue.	**3.0 to >2.0 pts** **P** **Identifies** a broad ethical issue or area and makes general statements about the issue and the role of an IT professional.	**2.0 to >0 pts** **F** Fails to **identify** a specific ethical issue, or a distinct ethical issue or area, and makes limited mention of the role of an IT professional in relation to ethics.	6.0 pts
Q7(ii): **Identifies** sources of legal information relating to TWO ethical issues and **discusses** how they can integrate this within their practice as an IT professional.	**6.0 to >5.0 pts** **HD** **Identifies** a source of legal information relating to an ethical issue and provides coherent reasons or ways they could integrate it into their practice.	**5.0 to >4.0 pts** **D** **Identifies** a source of legal information relating to an ethical issue and provides sound reasons or ways they could integrate it into their practice.	**4.0 to >3.0 pts** **CR** **Identifies** a source of legal information relating to an ethical issue and provides some reasons how they could integrate it into their practice.	**3.0 to >2.0 pts** **P** **Identifies** a source of legal information relating to an ethical issue and makes general statements about the ways they could integrate it into their practice.	**2.0 to >0 pts** **F** Fails to **identify** a source of legal information relating to an ethical issue or provides limited statements relating to the legal information and their practice.	6.0 pts

Criteria	Ratings					Pts
Q7(iii): **Researches** and **discusses** ONE case study of a breach of ethics by an IT company or professional in terms of what should be done to prevent or mitigate a breach.	**6.0 to >5.0 pts HD** **Demonstrates** extensive knowledge of the case study and provides coherent reasons for how an ethical breach could be mitigated or prevented.	**5.0 to >4.0 pts D** **Demonstrates** sound knowledge of the case study and provides sound reasons for how an ethical breach could be mitigated or prevented.	**4.0 to >3.0 pts CR** **Demonstrates** some knowledge of the case study and provides some reasons for how an ethical breach could be mitigated or prevented.	**3.0 to >2.0 pts P** **Demonstrates** extensive limited of the case study and general statements on how an ethical breach could be mitigated or prevented.	**2.0 to >0 pts F** Demonstrates limited or no knowledge of the case study and little or no indication of what could be done to prevent or mitigate an ethical breach.	6.0 pts
Q8: **Explains** the concept of control flow in programming	**6.0 to >5.0 pts HD** Explains in *extensive detail* the concept of control flow, providing an example from Ruby.	**5.0 to >4.0 pts D** Explains in *high detail* the concept of control flow, providing an example from Ruby.	**4.0 to >3.0 pts CR** Explains in *detail* the concept of control flow, providing an example from Ruby.	**3.0 to >2.0 pts P** Explains in *general terms* the concept of control flow, providing an example from Ruby.	**2.0 to >0 pts F** Provides a limited response which is *insufficient* in *detail*, *length* or *not relevant* to the question asked.	6.0 pts
Q9: **Explains** the concept of type coercion in programming	**6.0 to >5.0 pts HD** Explains in *extensive detail* the concept of type coercion, providing an example from Ruby.	**5.0 to >4.0 pts D** Explains in *high detail* the concept of type coercion, providing an example from Ruby.	**4.0 to >3.0 pts CR** Explains in *detail* the concept of type coercion, providing an example from Ruby.	**3.0 to >2.0 pts P** Explains in *general terms* the concept of type coercion, providing an example from Ruby.	**2.0 to >0 pts F** Provides a limited response which is *insufficient* in *detail*, *length* or *not relevant* to the question asked.	6.0 pts
Q10: **Explains** the concept of data types in programming	**6.0 to >5.0 pts HD** Explains in *extensive detail* the concept of data types, providing an example from Ruby.	**5.0 to >4.0 pts D** Explains in *high detail* the concept of data types, providing an example from Ruby.	**4.0 to >3.0 pts CR** Explains in *detail* the concept of data types, providing an example from Ruby.	**3.0 to >2.0 pts P** Explains in *general terms* the concept of data types, providing an example from Ruby.	**2.0 to >0 pts F** Provides a limited response which is *insufficient* in *detail*, *length* or *not relevant* to the question asked.	6.0 pts
Q11: **Identifies** classes used to solve a problem programatically and explains how identification was conducted	**6.0 to >5.0 pts HD** Correctly identifies classes to be used and explains in *extensive detail* the	**5.0 to >4.0 pts D** Correctly identifies classes to be used and explains in *high detail* the reasoning for this.	**4.0 to >3.0 pts CR** Correctly identifies classes to be used and explains in *detail* the reasoning for this.	**3.0 to >2.0 pts P** Correctly identifies classes to be used and explains in *general terms* the reasoning for this.	**2.0 to >0 pts F** Provides a limited response which is *insufficient* in *detail*, *length* or *not relevant* to the question asked.	6.0 pts

Criteria	Ratings					Pts
	reasoning for this.					
Q12: **Identifies** and **explains** an error in coding logic	**6.0 to >5.0 pts** **HD** Correctly identifies the error in the code and explains it in *extensive detail*.	**5.0 to >4.0 pts** **D** Correctly identifies the error in the code and explains it in *high detail*.	**4.0 to >3.0 pts** **CR** Correctly identifies the error in the code and explains it in *detail*.	**3.0 to >2.0 pts** **P** Correctly identifies the error in the code and explains it in *general terms*.	**2.0 to >0 pts** **F** Provides a limited response which is *insufficient* in *detail*, *length* or *not relevant* to the question asked.	6.0 pts
Q13: **Utilises** coding knowledge to correct erroneous code	**6.0 to >5.0 pts** **HD** Corrects code with *complete* accuracy.	**5.0 to >4.0 pts** **D** Corrects code with *high level* of accuracy.	**4.0 to >3.0 pts** **CR** Corrects code with *moderate level* of accuracy.	**3.0 to >2.0 pts** **P** Corrects code with *low level* of accuracy.	**2.0 to >0 pts** **F** Does not accurately correct code.	6.0 pts
Q14: Create a flowchart to outline the steps to solve a given programming problem	**4.5 to >4.0 pts** **HD** Creates a *highly accurate* flowchart with *extensive detail*, and *highly accurate* pseudocode that *completely* matches the process outlined in the flowchart.	**4.0 to >3.5 pts** **D** Creates an *accurate* flowchart with *high level of detail*, and *accurate* pseudocode that *completely* matches the process outlined in the flowchart.	**3.5 to >3.0 pts** **CR** Creates a *mostly accurate* flowchart and *mostly accurate* pseudocode that *mostly* matches the process outlined in the flowchart.	**3.0 to >2.5 pts** **P** Creates a *somewhat accurate* flowchart and *somewhat accurate* pseudocode that *somewhat* matches the process outlined in the flowchart.	**2.5 to >0 pts** **F** Provides a limited response which is *insufficient* in *detail*, *length* or *not relevant* to the question asked.	4.5 pts
Q15: Write pseudocode to solve a given programming problem	**4.5 to >4.0 pts** **HD** Writes *highly accurate* pseudocode that *completely* solves the given problem.	**4.0 to >3.5 pts** **D** Writes *accurate* pseudocode that *almost completely* solves the given problem.	**3.5 to >3.0 pts** **CR** Writes *mostly accurate* pseudocode that *partially* solves the given problem.	**3.0 to >2.5 pts** **P** Writes *somewhat accurate* pseudocode that *minimilistically* solves the given problem.	**2.5 to >0 pts** **F** Provides a limited response which is *insufficient* in *detail*, *length* or *not relevant* to the question asked.	4.5 pts
Q16: Write a program to solve a given problem	**4.5 to >4.0 pts** **HD** Writes *highly accurate* code that *completely* solves the given problem.	**4.0 to >3.5 pts** **D** Writes *accurate* code that *almost completely* solves the given problem.	**3.5 to >3.0 pts** **CR** Writes *mostly accurate* code that *partially* solves the given problem.	**3.0 to >2.5 pts** **P** Writes *somewhat accurate* code that *minimilistically* solves the given problem.	**2.5 to >0 pts** **F** Provides a limited response which is *insufficient* in *detail*, *length* or *not relevant* to the question asked.	4.5 pts
						Total Points: 103.5