Question 1

1. What is test-driven development? Describe how you would set up a test-driven development approach to a problem, and how you would interpret results as you develop your code.
Question 2

1. Assume you were asked to develop a system to manage student academic data (courses taken, grades, meeting degree requirements, etc.) within a University. Describe the approach you would use to design and implement this system. (Continue to next page if needed)
Question 3

1. Imagine that you were asked to build a system to determine whether or not to offer loans to individuals, by examining their personal financial data. Assume that this was previously managed by hand – people would bring in statements that showed their various financial situation, and the loan officer would go through this to make a decision. What are some of the tasks that a computer system is capable of performing that would otherwise be difficult or impossible?

2. Briefly, what approach(es) would you use (if you know) to implement each of the tasks identified above?

3. How confident are you that you could implement each of these solutions?
   _____ I couldn’t implement much if any of that
   _____ I could implement some parts of it, but there are other parts I probably couldn’t
   _____ I could implement almost all of it; there may be a few areas I’d have difficulty
   _____ I could implement all of it
Question 4

1. You are working for CompanyA, a company that writes software on contract. Your company previously developed a key part of a software system for CompanyB that lets people search through their home videos to automatically identify when specific things were occurring – e.g. a particular person was being filmed, or a particular action was being performed. CompanyC was impressed with your software, and has now hired your company to work for them. Specifically, they are developing video systems to be installed in large buildings (such as office buildings, apartment complexes, stores, etc.) and they want to use the technique you developed to let people analyze the video sequences, e.g. to detect shoplifters, or to monitor where people are in a building.

As a responsible software developer, what are some of the issues you face in this situation? What further information might you want to know before proceeding?
1. In a short paragraph, discuss (with justification) what you believe is the most important aspect of writing code.

2. Which of the following have you done before (check all that apply):

   _____ I have written an API specification
   _____ I have generated a design document for a software system
   _____ I have written a requirements specification
   _____ I have given a presentation about my code before an audience
   _____ I have written a description of team function and evaluation of other team members
   _____ I have given oral updates to team members regarding my progress on code
   _____ I have generated documentation for a user of a program I have developed
Question 6

1. Briefly describe the benefit of Agile development practices.

2. How have recent developments in computers, programming environments, and compilers changed the priorities one faces when developing software?
### Question 7

1. Have you ever used a version control system (e.g. CVS, SVN)?
   - _____ What is that?
   - _____ I have never used one
   - _____ I have used one once for my own code
   - _____ I have used one to work with code in an external (e.g. open source) repository

2. I have written code using an external library and API
   - _____ Never    _____ Once     _____ Occasionally     _____ Regularly

3. I have used a debugger to debug my code
   - _____ Never    _____ Once     _____ Occasionally     _____ Regularly

4. I have written a system using a language for data interchange (e.g. XML)
   - _____ Never    _____ Once     _____ Occasionally     _____ Regularly

5. I have used a bug/defect tracking system
   - _____ Never    _____ Once     _____ Occasionally     _____ Regularly

6. I have used an automated testing approach when developing software
   - _____ Never    _____ Once     _____ Occasionally     _____ Regularly

7. I have written programs of significant size using _______ different programming languages

---

Do you have any comments to add?

---

Thank you for your time!