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|  | Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions. |
|  | Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program’s discipline. |
|  | Communicate effectively in a variety of professional contexts. |
|  | Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles. |
|  | Function effectively as a member or leader of a team engaged in activities appropriate to the program’s discipline. |
|  | Apply computer science theory and software development fundamentals to produce computing-based solutions. |

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|  | Explain how AI impacts society |
|  | Apply AI methods to perform practical tasks |
|  | Synthesize a simple AI system |
|  | Evaluate different AI approaches to solve a problem |
|  | Explain the basic principles of the data mining process. |
|  | Prepare data for mining and exploration |
|  | Use data mining techniques and modern tools to discover trends and patterns in realistic datasets |
|  | Evaluate different data mining models/techniques with respect to their performance accuracy. |
|  | Function on teams and communicate effectively in written and oral forms. |
|  | Explain techniques of mathematical models. |
|  | Design models for simple and complex problems. |
|  | Model discrete event systems. |
|  | Use simulation software to solve complicated problems. |
|  | Evaluate the performance of different systems using simulation techniques. |
|  | Describe the main components of a machine learning system. |
|  | Design training sets and testing sets for machine learning tasks. |
|  | Apply machine learning techniques to discover trends and patterns in realistic datasets. |
|  | Evaluate different machine learning techniques in terms of their applicability to different Machine Learning problems. |
|  | Explain the engineering design process, principles, and standards |
|  | Use project management tools in Computer Science projects |
|  | Apply the engineering design process to Computer Science projects |
|  | Function effectively on teams in Computer Science projects |
|  | Explain formalisms and operations of computer graphics |
|  | Use graphic software tools and methods to produce computer graphics |
|  | Compare methods and tools used in computer graphics |
|  | Develop a simple computer animation |
|  | Describe the impact of bioinformatics in exploring, analyzing and understanding genetic data. |
|  | Analyze biological sequences using web-based bioinformatics tools. |
|  | Design an algorithm to solve biology related problem. |
|  | Compare bioinformatics data types including sequences, structures, and expression data. |
|  | Explain the evolution of Internet technologies and Web applications concepts and architectures. |
|  | Develop Internet-based applications using client-side and server-side programming. |
|  | Write and parse XML documents |
|  | Develop Internet-based applications using Web Services technology. |
|  | Work on a team to build Internet-based applications |
|  | Discuss the basic concepts of Intelligent Systems. |
|  | Analyze current applications and limitations of intelligent robots. |
|  | Create mobile robots. |
|  | Develop software required to control intelligent robots |
|  | Design mobile User Interface (views, layout, controls, etc.) |
|  | Explain the key technological principles and methods for delivering and maintaining mobile applications |
|  | Apply Model-View-View-Model (MVVM) design principle |
|  | Use MVVM to develop a complete project/application for smart-phones and tablets. |
|  | Apply computer graphics techniques to visualize different types of data |
|  | Compare different types of animations |
|  | Demonstrate knowledge of scientific data visualization methods |
|  | Create a computer graphic animationusing industry standard tools |
|  | Explain the main aspects of data analysis process. |
|  | Demonstrate an understanding of basic techniques for intelligent data analysis. |
|  | Evaluate and analyze data-driven projects. |
|  | Apply Computational Intelligence techniques for data analysis. |
|  | Function effectively on teams for the successful completion of a project |
|  | Assess the feasibility and applications of the specialized topic |
|  | Recognize the methods, techniques, and skills specific to the topics. |
|  | Apply the specialized methods, techniques, and skills in Computer Science |
|  | Translate a problem expressed in English, mathematics or a diagram to a computer program. |
|  | Implement algorithms using programming constructs (variables, control structures, methods). |
|  | Solve problems using suitable data structures. |
|  | Implement searching, summing and selecting algorithms. |
|  | Design and implement algorithm to solve simple problems. |
|  | Choose suitable data type to represent the information. |
|  | Apply sequence, selection and repetition structures to solve problems. |
|  | Design and implement programs containing many methods. |
|  | Manipulate One-Dimension and Two-Dimension arrays. |
|  | Implement classes to solve a given problem. |
|  | Test simple classes. |
|  | Design classes using existing classes and libraries. |
|  | Develop a class hierarchy using inheritance. |
|  | Develop classes for simple data structures. |
|  | Design and implement small and medium size software problems using objects. |
|  | Use Arrays and Array-Lists in solving problems. |
|  | Implement user-defined classes to solve a given problem. |
|  | Use predefined libraries to develop programs with graphical user interface. |
|  | Develop a class hierarchy using inheritance. |
|  | Explain the logical progression of operating system development. |
|  | Explain the necessary components and structures of an operating system. |
|  | Install and customize an operating system. |
|  | Write simple shell scripts in operating systems |
|  | Evaluate various methods for process scheduling and inter-process communication. |
|  | Explain file-system interfaces. |
|  | Discuss issues related to the process of user-centered design. |
|  | Select appropriate interaction styles. |
|  | Apply usability principles and guidelines. |
|  | Build effective prototypes of user interfaces. |
|  | Evaluate user interfaces given design goals, user goals, and usability principles. |
|  | Apply recursion to solve problems. |
|  | Use APIs for implementing moderate size programs with data structures. |
|  | Design and implement linear data structures. |
|  | Design and implement tree data structures. |
|  | Model and Solve problems using graphs. |
|  | Create an effective project plan |
|  | Analyze project requirements |
|  | Undertake a survey of related work and evaluate the project objectives against the findings |
|  | Integrate IT technologies/principles into the project design |
|  | Communicate effectively both orally and in writing |
|  | Function effectively, professionally and ethically on teams |
|  | Apply enabling technologies/principles to implement the project |
|  | Analyze obtained results and make recommendations |
|  | Communicate effectively both orally and in writing |
|  | Function effectively, professionally and ethically on teams |
|  | Recognize the need for continuing professional development |
|  | Explain the main concepts of Software Engineering. |
|  | Outline the fundamentals of software requirements. |
|  | Identify the software design methodologies. |
|  | Use different testing methods. |
|  | Produce a working software prototype. |
|  | Use CASE tools for design and implementation. |
|  | Determine the time and space complexity of algorithms. |
|  | Apply recurrence relations to estimate the time complexity of algorithms |
|  | Apply various algorithmic strategies to solve problems. |
|  | Explain Nondeterministic Polynomial completeness concepts. |
|  | Explain the various dimensions of a game. |
|  | Analyze the mechanics of games. |
|  | Develop a complete game design based on a game design template. |
|  | Implement a novel game. |
|  | Work effectively as members of a team. |
|  | Describe the main concepts of a database system. |
|  | Compare a database system approach to a file-based system approach. |
|  | Design a database using the entity-relationship diagram (ERD). |
|  | Use Relational Algebra to perform various operations on relations. |
|  | Apply normalization to database tables. |
|  | Function effectively as a team to create and query a database. |
|  | Analyze issues and case studies using ethical decision making based on a code of ethics and formal methods |
|  | Identify privacy, freedom of speech and crime issues in Cyberspace. |
|  | Discuss intellectual property and software development issues. |
|  | Discuss the implications of computing in the workplace on workers and employers. |
|  | Discuss the socio-economic implications of online communities and the Digital Divide. |
|  | Function in groups to assess current ethical issues and communicate the results in oral and written form |
|  | Define the computing requirements appropriate to design a computer science solution. |
|  | Apply knowledge of computer science theory and approaches to solve practical problems. |
|  | Develop a computer science application. |
|  | Function effectively on teams for the successful completion of a project |