

EXAM CODE **190**

CATALOG NUMBER **ITEx210**

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**PRACTICE EXAMS**  
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# Introduction to Computer Programming Using Java

CREDIT HOURS

**3**

LEVEL

**LOWER**

PUBLISHED FEBRUARY 2021

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## SECTION ONE

# Preparing for the Exam

## Before You Choose This UExcel Exam

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### Uses for the Examination

- Excelsior College, the test developer, recommends granting three (3) semester hours of lower-level undergraduate credit to students who receive a letter grade of C or higher on this examination.
- Other colleges and universities also recognize this exam as a basis for granting credit or advanced standing.
- Individual institutions set their own policies for the amount of credit awarded and the minimum acceptable score.

Examinees who have applied to Excelsior College should ask their academic advisor where this exam fits within their degree program.

Examinees **not enrolled** in an Excelsior College degree program should check with the institution from which they wish to receive credit to determine whether credit will be granted and/or to find out the minimum grade required for credit. Those who intend to enroll at Excelsior College should ask an admissions counselor where this exam fits within their intended degree program.

For more information on exam availability and actual testing information, see the [Exam Registration and Information Guide](#).

### Examination Length and Scoring

This examination consists of 80 multiple choice and other type questions. You will have two (2) hours to complete the exam. Your score will be reported as a letter grade. Questions are scored either correct (1) or incorrect (0). There is no partial credit. Each credit-bearing exam contains pretest questions, which are embedded throughout the exam. They are indistinguishable from the scored questions. It is to your advantage to do your best on all the questions. Pretest questions are being tried out for use in future versions of the exam.

The UExcel exams do **not** have a fixed grading scale such as A = 90–100%, B = 80–90%, and so forth, as you might have seen on some exams in college courses. Each UExcel test has a scale that is set by a faculty committee and is different for each exam. The process, called standard setting, is described in more detail in the [Technical Handbook](#). Excelsior puts each exam through a standard setting because different test questions have different levels of difficulty. To explain further, getting 70% of the questions right on the exam when the questions are easy does not show the same level of proficiency as getting 70% of questions correct when the questions are hard. Every form of a test (a form contains the test questions) has its own specific grading scale tailored to the particular questions on each exam form.

Please also note that on each form, some of the questions (referred to as pretest questions) count toward the score and some do not; the grading scale applies only to those questions that count toward the score. The area with percentage ratings on the second page of your score report is intended to help identify relative strengths and weaknesses and which content areas to emphasize, should you decide to take the examination again. Your grade

is **based on only the scored questions**. Therefore, the percentage ratings do not necessarily reflect the total percentage that counted toward your grade.

For the best view of the types of questions on this exam, see the sample questions in the back of this guide. Practice, practice, practice!

## Score Reporting

For most of our examinations, based on performance, an examinee is awarded a letter grade of A, B, C, or F. A letter grade of D can be given, but credit is awarded for A, B, and C letter grades only. The letter grades reported to examinees indicate that their performance was equivalent to the performance of students who received the same letter grade in a comparable, on-campus course.

More specifically, the letter grade indicates the examinee's proficiency relative to the learning outcomes specified in the exam content guide. Following are general descriptions of examinee performance at each level:

## Letter Grade Description

- A Highly Competent: Examinee's performance demonstrates an advanced level of knowledge and skill relative to the learning outcomes.
- B Competent: Examinee's performance demonstrates a good level of knowledge and skill relative to the learning outcomes.
- C Marginally Competent: Examinee's performance demonstrates a satisfactory level of knowledge and skill relative to the learning outcomes.
- D Not Competent (no credit recommended): Examinee's performance demonstrates weak knowledge of the content and minimal skill relative to the learning outcomes.<sup>①</sup>
- F Fail (no credit recommended): Examinee's performance demonstrates no knowledge of the content and no skill in the subject relative to the learning outcomes.

Credit is transcribed by Excelsior College for examinees who achieve letter grades of C or higher.

We encourage colleges and universities to use the Excelsior College letter grades of A, B, and C as acceptable standards for awarding credit.

<sup>①</sup> In general, two-hour exams do not award a D letter grade.

See page 21, at the back of this content guide, for a sample UExcel Grade Report for Examinations.

## Excelsior College Bookstore

The Excelsior College Bookstore offers recommended textbooks and other resources to help you prepare for UExcel exams.

The bookstore is available online at (login required): [www.excelsior.edu/bookstore](http://www.excelsior.edu/bookstore)

## Excelsior College Library

Library services are available to students enrolled in a degree program at Excelsior College. Created through our partnership with the Sheridan Libraries of The Johns Hopkins University, the library provides access to journal articles, books, websites, databases, reference services, and many other resources. To access the Excelsior College Library, visit [www.excelsior.edu/library](http://www.excelsior.edu/library) (login is required). Access to the library is available 24/7.

## Take Charge of Your Own Learning

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At Excelsior College, independent, self-directed study supported by resources we help you find is not a new concept. We have always stressed to students who take exams that they are acting as their own teacher, and that they should spend as much time studying for an exam as they would spend in a classroom and on homework for a corresponding college course in the same subject area.

Begin by studying the content outline contained in this content guide, at its most detailed level. You will see exactly which topics are covered, and where chapters on those topics can be found in the Recommended Resources. You will see exactly where you might need to augment your knowledge or change your approach.

The content outline, along with the learning outcomes for this exam and recommended textbooks, will serve as your primary resources.

## How Long Will It Take Me to Study?

Study for a UExcel exam is comparable to an equivalent college-level course. As an independent

learner, you should study and review as much as you would for the same subject in a campus-based college course. If you already have a background in the subject, you may be able to pass the exam successfully with fewer hours of study. It depends upon the learner as well as the subject, the number of credits (for example, a 6- or 8-credit exam will require more hours of study than a 3-credit exam), and the length of the exam. We strongly encourage you to create a long-term action or study plan, so that you have a systematic approach to prepare for the exam. We've included guidelines for creating such a plan.

## How Can I Create an Effective Long-Term Study Plan?

**1. Determine the time you will require to complete your preparation for this exam.** If you have not studied the subject before, you should plan to budget approximately 45 hours of study time for every credit: 135 hours for 3 credits, 180 hours for 4 credits, 270 hours for 6 credits, and 360 hours for 8 credits. These hours are rules of thumb based on expectations for a student taking a course in the subject; it may take you more or less time, depending on how familiar you are with the material and how easily you absorb the information studying on your own. Aside from the content review, you should then factor in time to search for and use other resources, and to complete any projects and assignments in the study materials that will clarify your understanding of the topics in the content outline (that part in the content guide where the specific areas of study are spelled out). Spend more time on concepts and areas in which you feel you are weak. Totaled, this is approximately the amount of time you should expect to devote to a three-credit, campus-based course. The actual amount of time you require depends on many factors, and will be approximate. If your background is weak, you may need to set aside substantially more than 135–150 hours. If your background is strong, you may budget less time.

Take a few minutes to review the content outline to assess your familiarity with the content. Then, in the space below, write the number of hours you will allocate to complete preparing for the exam.

Hours Required =

### **2. Determine the time you will have available for study.**

In self-study, you need structure, as well as motivation and persistence, and a methodical approach to preparation. There is no set class to keep you on task. You have to do that yourself. Construct a time-use chart to record your daily activities over a one-week period. The most accurate way to do this is to complete the chart on a daily basis to record the actual amount of time you spend eating, sleeping, commuting, working, watching television, caring for others and yourself, reading, and everything else in an adult's life. However, if your schedule is regular, you might prefer to complete the chart in one sitting and, perhaps, by consulting your appointment book or planner.

After you have recorded your activities, you will be ready to schedule study periods around these activities or, perhaps, instead of some of them. In the space below, write the number of hours you will be able to set aside for study each week.

Hours Required =

### **3. Divide the first number by the second number.**

This will give you the number of weeks you will need to set aside for independent study. For example, if you think you will require 170 hours of study and you have 10 hours available to study each week, divide 170 hours by 10 hours and you will get 17. This means that you will need about 17 weeks to complete this course of study. However, you will also need to allow about a week for review and self-testing. Moreover, to be on the safe side, you should also add two weeks to allow for unforeseen obstacles and times when you know you will not be able to study (e.g., during family illnesses or holidays). So, in this case, you should allot a total of 18 to 19 weeks to complete your study.

### **4. Schedule your examination to coincide with the end of your study period.**

For example, if you plan to allow 18 weeks for study, identify a suitable examination date and begin study at least 18 weeks before that date. (The date you begin study assumes that you will have received all of your study materials, particularly textbooks, by that time.)

### **5. Format a long-term study plan.**

You will need to use a calendar, planner, or some other tool to format and track your long-term study plan. Choose a method that is convenient and one that keeps you aware of your study habits on a daily basis. Identify the days and exact hours of each day that you will reserve for study throughout your whole independent study period. Check to see that the total number of hours you designate for study on your long-term study plan adds up to the number of hours you have determined you will need to complete this course of study (Step 1).

### **6. Record in your long-term study plan the content you plan to cover during each study period.**

Enter the session numbers, review, and examination preparation activities you will complete during each study period. While it is suggested that approximately 160–170 hours of study is required for this exam, each and every student may require different timelines based on their comfort with, and comprehension of, the material.

You now have a tentative personal long-term study plan. Keep in mind that you will have to adjust your study plan, perhaps several times, as you study. It is only by actually beginning to work systematically through the material, using the content outline, that you will be able to determine accurately how long you should allow for each unit.

## **What Learning Strategy Should I Use?**

The following guidelines are intended to help you acquire the grounding in the knowledge and skills required for successful completion of this examination.

### **1. Approach learning with a positive attitude.**

Most students are capable of learning subject content if they devote enough time and effort to the task. This devotion will give you a positive edge and a feeling of control.

### **2. Diligently complete the exact work you specified in your study plan.**

Your study plan is being designed for the specific purpose of helping you achieve the learning outcomes for this exam.

### **3. Be an active learner.**

You should actively engage in the learning process. Read critically, take notes, and continuously monitor your comprehension. Keep a written record of your progress, highlight content you find difficult to grasp, and seek assistance from someone in your learning community who can help you if you have difficulty understanding a concept.

### **4. Be patient: you may not understand everything immediately.**

When encountering difficulty with new material, be patient with yourself and don't give up. Understanding will come with time and further study. Sometimes you may need to take a break and come back to difficult material. This is especially true for any primary source material (original letters, documents, and so forth) that you may be asked to read. The content outline will guide you through the material and help you focus on key points. You will find that many concepts introduced in earlier sessions will be explained in more detail in later sessions.

### **5. Apply your learning to your daily life.**

Use insights you gain from your study to better understand the world in which you live. Apply the learning whenever you can. Look for instances that support or contradict your reading on the subject.

### **6. Accommodate your preferred way of learning.**

How do you learn best? Common ways to learn are reading, taking notes and making diagrams, and by listening to someone (on video or live). Others learn by doing. Do any of these descriptions apply to you? Or does your learning style vary with the learning situation? Decide what works for you and try to create a learning environment to accommodate your preferences.

## **Study Tips**

Become an active user of the resource materials. Aim for understanding rather than memorization. The more active you are when you study, the more likely you will be to retain, understand, and apply the information.

The following techniques are generally considered to be active learning:

- **preview or survey** each chapter

- **highlight or underline text** you believe is important
- **write questions or comments** in the margins
- **practice re-stating content** in your own words
- **relate what you are reading** to the chapter title, section headings, and other organizing elements of the textbook
- **find ways to engage** your eyes, your ears, and your muscles, as well as your brain, in your studies
- **study with a partner or a small group**
- **prepare your review notes** as flashcards or create recordings that you can use while commuting or exercising

When you feel confident that you understand a content area, review what you have learned. Take a second look at the material to evaluate your understanding. If you have a study partner, the two of you can review by explaining the content to each other or writing test questions for each other to answer. Review questions from textbook chapters may be helpful for partner or individual study, as well.

Study smart for your UExcel exam! Success starts with establishing a relationship with your advisor.

## Using UExcel Practice Exams

The official UExcel practice exams are highly recommended as part of your study plan. They can be taken using any computer with a supported web browser such as Google Chrome.

The practice exam package comes with two sets of questions. Please be aware that there will be fewer questions on the practice exams than there will be on the exam you take for credit. Generally, the practice questions will not be the same as the ones you will see when you take the actual exam for credit. They are intended to expose you to the types of questions you'll encounter in the actual exam. Practice questions are a tool, and do not provide a full exam experience. For example, the practice question sets do not have time limitations. Begin with the Content Guide, especially the detailed content outline. Memorizing specific questions and answers on the practice sets is not as effective as using the questions to practice, along with the content outline, to see which concepts you may need to study further. To register for the practice exam, visit [www.excelsior.edu](http://www.excelsior.edu) and log into your MyExcelsior

account. **Please note: You must be registered for the corresponding credit-bearing exam before you can register for the practice exam.**

Practice exams are not graded. Rather, they are intended to help you make sure you understand the subject and give you a sense of what the questions will be like on the exam for credit. Ideally, you would check any questions you got wrong, look at the explanations, and go back to the textbook to reinforce your understanding. After taking both forms of the practice exam, you should feel confident in your answers and confident that you know the material listed in the content outline.

Practice exams are one of the most popular study resources. Practice exams are typically shorter than the credit-bearing exam. Since the questions are drawn from the same pool of questions that appear on the credit-bearing exam, what you will see when you sit for the graded exam will be roughly the same. Used as intended, these practice exams will enable you to:

- Review the types of questions you may encounter on the actual exam.
- Practice testing on a computer in a timed environment.
- Practice whenever and wherever it is convenient for you.

Take two different forms of a practice exam within a 180-day period. (We highly recommend that you take the first form of the practice exam as a pretest, early in the study period. Use the results to identify areas to further study and carry out a plan. Then take the second form as a post-test and see how much you have improved.)

Although there is no guarantee, our research suggests that exam takers who do well on the practice exams are more likely to pass the actual exam than those who do not take advantage of the opportunity. Note that since the practice exams are not graded (calibrated) the same way as the scores on the credit-bearing exam, it will be hard for you to use the practice exams as a way to predict your score on the credit-bearing exam. The main purpose of the practice exams is for you to check your knowledge and to become comfortable with the types of questions you are likely to see in the actual, credit-bearing exam.

## About Test Preparation Services

Preparation for UExcel® exams and Excelsior College® Examinations, though based on independent study, is supported by Excelsior College with a comprehensive set of exam learning resources and services designed to help you succeed. These learning resources are prepared by Excelsior College so you can be assured that they are current and cover the content you are expected to master for the exams. These resources, and your desire to learn, are usually all that you will need to succeed.

There are test-preparation companies that will offer to help you study for our examinations. Some may imply a relationship with Excelsior College and/or make claims that their products and services are all that you need to prepare for our examinations.

Excelsior College does not endorse the products and services of any tutorial or test preparation firm. We do not review the materials provided by these firms for the content or compatibility of their material and resources with UExcel® exams or Excelsior College Examinations®. No test preparation vendor is authorized to provide admissions counseling or academic advising services, or to collect any payments, on behalf of Excelsior College. Excelsior College does not send authorized representatives to a student's home nor does it review the materials provided by test preparation companies for content or compatibility with Excelsior College examinations.

To help you become a well-informed consumer, we suggest that before you make any purchase decision regarding study materials provided by organizations other than Excelsior College, you consider the points outlined on our website at [www.excelsior.edu/testprep](http://www.excelsior.edu/testprep).

## Exam Preparation Strategies

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Each learner is different. However, all learners should read the content outline in the exam's Content Guide and ensure that they have mastered the concepts. For someone with no prior knowledge of the subject, a rule of thumb is 135 hours of study for a 3-credit exam—this number is just to give you an idea of the level of effort you will need, more or less.

## Content Guides

This content guide is the most important resource. It lists the outcomes, a detailed content outline of what is covered, and textbooks and other study resources. It also has sample questions and suggestions for how to study. Content guides are updated periodically to correspond with changes in particular examinations and in textbook editions. Examinees can download any of the latest free UExcel content guides by visiting the individual exam page or from the list at [www.excelsior.edu/contentguides](http://www.excelsior.edu/contentguides).

### Using the Content Outline

Each content area in the content outline includes the most important sections of the recommended resources for that area. These annotations are not intended to be comprehensive. You may need to refer to other chapters in the recommended textbooks. **Chapter numbers and titles may differ among textbook editions.**

This content outline contains examples of the types of information you should study. Although these examples are many, do not assume that everything on the exam will come from these examples. Conversely, do not expect that every detail you study will appear on the exam. Any exam is only a broad sample of all the questions that could be asked about the subject matter.

### Using the Sample Questions and Rationales

Each content guide provides sample questions to illustrate those typically found on the exam. These questions are intended to give you an idea of the level of knowledge expected and the way questions are typically phrased. The sample questions do not sample the entire content of the exam and are not intended to serve as an entire practice test.

# Recommended Resources for the UExcel Exam in Introduction to Computer Programming Using Java

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The resources listed below were selected by the faculty members on the examination committee for use in developing this exam.

Resources listed under “Strongly Recommended” were used by the committee to verify all the questions on the exam. Please refer to the Content Outline to see which parts of the exam are cross-referenced to these resources.

Resources listed under “Optional” provide additional material that may deepen or broaden your understanding of the subject, or that may provide an additional perspective on the exam content. Textbook resources, both Strongly Recommended and Optional, may be purchased from the Excelsior College bookstore at [www.excelsior.edu/bookstore](http://www.excelsior.edu/bookstore).

You should allow ample time to obtain the necessary resources and to study sufficiently before taking the exam, so plan appropriately, with an eye towards your own personal learning needs. See the sections in this guide on the Excelsior College Bookstore and the Excelsior College Library, and under Reducing Textbook Costs, to help you secure the Strongly Recommended resources successfully.

## Textbook Editions

Textbook editions listed in the UExcel content guides may not be the same as those listed in the bookstore. Textbook editions may not exactly match up in terms of table of contents and organization, depending upon the edition. However, our team of exam developers checks exam content against every new textbook edition to verify that all subject areas tested in the exam are still adequately available in the study materials. If needed, exam developers will list additional Strongly Recommended resources to ensure that all topics in the exam are still sufficiently covered. Public libraries may have the textbooks you need, or may be able to obtain them for you through interlibrary loan to reduce textbook costs. You may also consider financial aid, if you qualify, to further help defray the steep cost of textbooks. A section on open educational

resources (OER) has been included in this guide to help you locate additional, possibly free resources to augment your study.

## Strongly Recommended

Liang, Y. (2017). *Intro to Java Programming, Brief – with Access* (11th ed.). Upper Saddle River NJ: Prentice Hall.

The study materials may be purchased from the [Excelsior College Bookstore](#).

## Optional Resources

The examination development committee did not identify any specific Optional resources for this exam. Topics are sufficiently covered in the textbook. If you would like to explore specific topics in more depth, we encourage you to refer to available Open Educational Resources (OER). We've included some here in this section, under Free Websites to Enhance Learning.

## Free Websites to Enhance Learning

Java Home Page

[www.oracle.com/technetwork/java/index.html](http://www.oracle.com/technetwork/java/index.html)

JDKs

[java.sun.com/javase/downloads/index.jsp](http://java.sun.com/javase/downloads/index.jsp)

Tutorials

[java.sun.com/docs/books/tutorial/index.html](http://java.sun.com/docs/books/tutorial/index.html)

Eclipse IDE

[www.eclipse.org](http://www.eclipse.org)

Netbeans IDE

[netbeans.org](http://netbeans.org)

Practice test items

[www.cs.armstrong.edu/Liang/intro9e/test.html](http://www.cs.armstrong.edu/Liang/intro9e/test.html)

## Reducing Textbook Costs

Many students know it is less expensive to buy a used textbook, and buying a previous edition is also an option. The Excelsior College bookstore includes a buyback feature and a used book marketplace, as well as the ability to rent digital versions of textbooks for as long as students need them. Students are encouraged to explore these and the many other opportunities available online to help defray textbook costs.

## Open Educational Resources

There are many resources available online free of charge that may further enhance your study for the exam. Known as Open Educational Resources (OER), these may be textbooks, courses, tutorials, or encyclopedias. Any additional OER that you find independently should be used to augment study—not as replacements for the Strongly Recommended resources.

Most sites for university-based OER can be searched through [www.ocwconsortium.org](http://www.ocwconsortium.org) and/or [www.oercommons.org](http://www.oercommons.org).

Sites that specialize in web courses designed by college professors under contract with the website sponsor, rather than in web versions of existing college courses, include:

[www.education-portal.com](http://www.education-portal.com)

[www.opencourselibrary.org](http://www.opencourselibrary.org) (abbreviated as OCL)

We have included specific courses that cover material for one or more UExcel® exams from the sites in the listings above. It's worth checking these sites frequently to see if new courses have been added that may be more appropriate or may cover an exam topic not currently listed.

Sites like Khan Academy ([www.khanacademy.com](http://www.khanacademy.com)) and iTunes U feature relatively brief lessons on very specific topics rather than full courses. Full courses are also available on iTunes U (<http://www.apple.com/education/ipad/itunes-u/>). We have chosen a few courses and collections for this listing.

## Open Online Textbooks

BookBoon

<http://bookboon.com/en/textbooks-ebooks>

Flatworld Knowledge

<http://catalog.flatworldknowledge.com/#our-catalog>

## College Readiness

Khan Academy

<http://www.khanacademy.org/>

Hippocampus

<http://www.hippocampus.org/>

Open Course Library

<http://opencourselibrary.org/collg-110-college-success-course/>

## Study Aids

Education Portal

<http://education-portal.com/>

Khan Academy

<http://www.khanacademy.org/>

Annenberg Learner

<http://www.learner.org/>

OpenCourseWare

<http://ocwconsortium.org/en/courses/search>

OER Commons

<http://www.oercommons.org/>

Open Course Library

<http://www.opencourselibrary.org/>

To achieve academic success, rate yourself at Excelsior College's Self-Regulated Learning Lab. Visit the Diagnostic Assessment & Achievement of College Skills site at <https://srl.daacs.net/>

It's free!

# Content Outline

## General Description of the Examination

The UExcel Introduction to Computer Programming using Java examination is based on material typically taught in a one-semester lower-level undergraduate course in Computer Programming. The content of the examination corresponds to course offerings such as Introduction to Computer programming, Computer Science I, or Introductory programming using object oriented programming/Java.

The examination measures comprehension and understanding of computer and software organization; the software development process; variables, constants, primitive data types, expressions, and operators; control statements; modularity and function design; linear data structures; object oriented design, classes, and objects; and files in the Java language.

Those beginning to study for this exam should have a basic proficiency in computer use and access to Java IDE.

## Learning Outcomes

After you have successfully worked your way through the recommended study materials, you should be able to demonstrate the following learning outcomes:

1. Understand computer and software organization and the software development process; recognize different types of errors and error elimination techniques.
2. Understand variables, constants, primitive data types, their uses and conversion, and operators; interpret expressions based on the operator precedence.
3. Given a well defined programming problem, identify the structure (for example nesting), types and conditions of control statements needed for solving this problem.
4. Understand modularity; analyze a well defined programming problem and use functional decomposition to identify functional units (functions or methods) including their parameters, return values, and internal structure required for solving the problem.
5. Given a well defined programming problem, identify the data structures (such as arrays, strings, or classes) and understand the mechanisms of using them for solving the problem.
6. Understand the concepts of object oriented design; analyze a well defined programming problem to identify classes, the relationships between classes and internal organization of classes involved in solving the problem.
7. Understand the concept of a file and text input/output from and to files.

## Content Outline

The content outline describes the various areas of the test, similar to the way a syllabus outlines a course. To fully prepare requires self-direction and discipline. Study involves careful reading, reflection, and systematic review.

The major content areas on the Introduction to Computer Programming Using Java examination, the percent of the examination, and the hours to devote to each content area are listed below.

Content Area	Percent of the Examination	Hours of Study*
I. Programming Basics	15%	21
II. Control	25%	34
III. Modularity	15%	21
IV. Arrays and Strings	15%	21
V. Objects and classes	20%	27
VI. Files	10%	14
<b>Total</b>	<b>100%</b>	

\*\*Approximate: For those examinees who know the topic well, less time may be needed to learn the subject matter. For those who are new to the subject matter, more time may be required for study.

NOTE: Occasionally, examples will be listed for a content topic to help clarify that topic. However, the content of the examination is not limited to the specific examples given.

### I. Programming Basics

#### 15 PERCENT OF EXAM

Ch. 1, Introduction to Computers, Programs, and Java

Ch. 2, Elementary Programming

Ch. 3, Selections

Ch. 4, Mathematical Functions, Characters, and Strings

- A. Computer and software organization (CPU, memory, storage, IO devices, programming languages, role of operating system)

- B. Software development (Development process, IDE, JVM, Programming styles, types of errors, debugging)

- C. Data definition

1. Data types and type conversion
2. Identifiers, variables, and constants

- D. Assignment and arithmetic expressions and precedence

- E. Formatted and unformatted console output

### II. Control

#### 25 PERCENT OF EXAM

Ch. 3, Selections

Ch. 5, Loops

Ch. 12, Exception Handling and Text I/O

- 
- A. Boolean operators
    - 1. Relational operators
    - 2. Logical operators
  - B. Control statements
    - 1. Conditional execution
      - a. If statement
      - b. Switch statement
    - 2. Repetition
      - a. While loop and sentinel
      - b. For loop
    - 3. Choice and nesting of control statements
  - C. Exceptions (throwing and catching)

### III. Modularity

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**15** PERCENT OF EXAM

---

[Ch. 6, Methods](#)

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- A. Passing parameters (by value and by reference)
- B. Returning the values
- C. Scope of variables and functions
- D. Overloading
- E. Stepwise refinement

### IV. Arrays and Strings

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**15** PERCENT OF EXAM

---

[Ch. 4, Mathematical Functions, Characters, and Strings](#)

[Ch. 7, Single-Dimensional Arrays](#)

[Ch. 10, Object-Oriented Thinking](#)

---

- A. Creating and initializing arrays
- B. Linear operations on arrays and strings
  - 1. Traversing
  - 2. Searching
- C. Passing arrays as parameters and returning arrays

- D. String class (constructing, modification and linear operations)

### V. Objects and Classes

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**20** PERCENT OF EXAM

---

[Ch. 9, Objects and Classes](#)

[Ch. 10, Object-Oriented Thinking](#)

[Ch. 11, Inheritance and Polymorphism](#)

---

#### A. Classes

- 1. Member variables
- 2. Member functions, getters, and setters
- 3. Visibility
  - a. Scope
  - b. Modifiers
- 4. Constructing and destroying objects

#### B. Advanced object oriented concepts

- 1. Abstraction
- 2. Encapsulation
- 3. Inheritance
  - a. Sub and super classes
  - b. This reference
  - c. Super keyword
  - d. Protected members
- 4. Polymorphism and overriding

### VI. Files

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**10** PERCENT OF EXAM

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[Ch. 12, Exception Handling and Text I/O](#)

---

- A. File class
- B. Input (Scanner class)
- C. Output (PrintWriter class)

## SECTION THREE

# Sample Questions

The sample questions give you an idea of the level of knowledge expected in the exam and how questions are typically phrased. They are not representative of the entire content of the exam and are not intended to serve as a practice test.

Rationales for the questions can be found on pages 15–17 of this guide. In that section, the correct answer is identified and each answer is explained. The number in parentheses at the beginning of each rationale refers to the corresponding section of the content outline. For any questions you answer incorrectly, return to that section of the content outline for further study.

1. A program needs to store the total tally of students enrolled in a course on campus. The maximum class size is 500. What is the most efficient data type in terms of storage used for such a variable?
  - 1) byte
  - 2) short
  - 3) int
  - 4) double
2. Which word adheres to the acceptable naming conventions for a new user-defined Java class?
  - 1) System
  - 2) public
  - 3) final
  - 4) RunTotal
3. What is the value of `z` after this section of code executes?

```
double a = 5;
double b = 2;
double c = 8;

double z = a + b - c / 2 * 4 + 1;
```

  - 1) -1
  - 2) -2.5
  - 3) -8.0
  - 4) -.11111111
4. Which operator changes the value of one of its operands?
  - 1) <=
  - 2) ||
  - 3) ++
  - 4) ?:
5. Which data type is a valid switch-expression?
  - 1) boolean
  - 2) char
  - 3) float
  - 4) long
6. Which for loop prints the squares of the first ten even positive integer numbers?
  - 1) 

```
for (int i = 0; i < 20; i+=2)
    System.out.println(i * i);
```
  - 2) 

```
for (int i = 2; i < 21; i+=2)
    System.out.println(i * i);
```
  - 3) 

```
for (int i = 0; i <= 20; i++)
    System.out.println(i * i);
```
  - 4) 

```
for (int i = 2; i <= 20; i++)
    System.out.println(i * i);
```

7. What is the output of the following program?

```
public class Main {
    public static void main(String[]
args) {
        int x = 10;
        System.out.println("Before=", x);
        add(x,1);
        System.out.println("After=", x);
    }

    public void add(int x, int y) {
        x = x + y;
    }
}
```

- 1) Before=10 After=10
- 2) Before=10 After=11
- 3) Before=10  
After=10
- 4) Before=10  
After=11

8. Which variable is out of scope?

A variable declared

- 1) in a class and used in a method defined in the same class.
- 2) as a method parameter and used in the same method.
- 3) in the loop initial-action and used in the same loop.
- 4) in a method and used in another method of the same class.

9. Which method overloads the method below? (Only the method signatures are given.)

- 1) `public int addNumbers(int num1, int num2)`
- 2) `public void addNumbers(int n1, int n2)`
- 3) `public void addNumbers(long num1, double num2)`
- 4) `public void addNums(int num1, int num2)`

10. What is used to represent the state of the object?

- 1) a data field
- 2) a parameter
- 3) an argument
- 4) a constructor

11. What term is used to describe the creation of a new object?

- 1) abstraction
- 2) contract
- 3) encapsulation
- 4) instantiation

12. Which methods cannot be overridden?

- 1) Methods that are overloaded.
- 2) Methods that have a return value.
- 3) Methods that are protected.
- 4) Methods that are final.

13. Which statement will create a 10-element array of char values?

- 1) `char letters = new char[10];`
- 2) `String [] letters = new String[10];`
- 3) `char [] letters = new char[];`
- 4) `char letters [] = new char[10];`

14. Which technique does a binary algorithm search use to find an element in a list?

- 1) divide and conquer
- 2) row and column
- 3) first to last
- 4) last to first

15. Assuming that s1 and s2 are String objects, which of the following expressions is true if and only if s1 is lexicographically smaller than s2?

- 1) `s1 < s2`
- 2) `s1.compareTo(s2) <= 0`
- 3) `s1.compareTo(s2) > 0`
- 4) `s2.compareTo(s1) > 0`

16. What is the purpose of the File class?

- 1) to store data on disk
- 2) to allow creation of bigger arrays
- 3) to sort data before being stored
- 4) to reduce the use of system resources

17. The object reader is an instance of the Scanner class. Which statement can be used to read the number 15.6 from the keyboard and store the value 15 in the variable n?
- 1) `int n = reader.nextInt();`
  - 2) `int n = reader.next();`
  - 3) `int n = reader.nextInt;`
  - 4) `int n = (int)reader.nextDouble();`
18. What happens if a file previously opened for writing is not closed by the end of the program?
- 1) A compile error will occur.
  - 2) A runtime error will occur.
  - 3) The data may not be saved properly in the file.
  - 4) An `IOException` will be thrown.

## SECTION FOUR

# Rationales

### 1.(IC1)

- 1) A byte can only hold numbers from  $-128$  to  $+127$ , so it would cause an overflow for a class size larger than 127.
- \*2) A short can hold numbers from  $-32768$  to  $32767$ . It will accommodate the maximum value of 500 with room to spare in the smallest amount of memory.
- 3) An int would work as it can hold numbers from  $-2$  billion to over 2 billion, however, it uses twice as many bytes as a short.
- 4) Since class sizes are whole numbers, a double is not advisable. A double uses 4 times as much space as a short and doubles cannot be compared for equality.

### 2.(IC2)

- 1) System is a pre-existing class name in the Java library and cannot be used.
- 2) public is a reserved key word in Java.
- 3) final is a reserved key word in Java.
- \*4) RunTotal follows the correct naming conventions for a Java class and can be used as such.

### 3.(ID)

- 1) You would get this answer if you performed the operations in order from left to right. However, this ignores the fact the \* and / have higher precedence than + and -.
- 2) You would get this answer if you performed the additions and subtractions first, then the multiplications and division, rather than the other way around.

- \*3) This is correct; the division is done first, then the multiplication, then all the additions and subtractions, from left to right.
- 4) You would get this result if you did the division last, rather than first.

### 4.(IIA1)

- 1) The <= operator does not change its operands.
- 2) The || operator does not change its operands.
- \*3) The ++ operator adds 1 to its operand.
- 4) The ?: operator does not change its operands.

### 5.(IIB1b)

- 1) A switch statement cannot select a case value based on a boolean expression.
- \*2) A switch statement can select a case value based on a char expression.
- 3) A switch statement cannot select a case value based on a float expression.
- 4) A switch statement cannot select a case value based on a long expression.

### 6.(IIB2b)

- 1) This sequence prints 0 and the squares of the first nine even positive integer numbers.
- \*2) This sequence prints the squares of the first ten even positive integer numbers.
- 3) This sequence prints 0 and the squares of the first twenty positive integer numbers.
- 4) This sequence prints the squares of the first eighteen positive integer numbers.

\*correct answer

7.(IIIA)

- 1) This would be the output if print were used instead of println
- 2) See 1) and 4).
- \*3) Because Java uses pass-by-value for passing primitive data types as parameters, the variable x's initial value is unchanged following the return from the add method.
- 4) The variable x takes on the value 11 inside the method add.

8.(IIIC)

- 1) A variable declared in a class can be used anywhere in the class.
- 2) A variable passed as a parameter can be used anywhere in the method.
- 3) The scope of a variable declared inside the for-loop header consists of the entire for-loop block.
- \*4) A variable declared in one method cannot be used in another method without being declared in that other method.

9.(IIID)

- 1) Changing the return type is not an overload and leads to a compile error.
- 2) Changing parameter names does not overload a method.
- \*3) Changing the parameter data types allows the compiler to distinguish between the methods.
- 4) Changing the method name creates a new method, not an overloaded method.

10.(VA1)

- \*1) A data field is an instance variable; variables can represent object state.
- 2) Objects do not have parameters or arguments. Objects have methods that have arguments or parameters.
- 3) See 2).
- 4) A constructor is a method; methods do not represent state.

11.(VB1)

- 1) Abstraction is separation of implementation and the interface.
- 2) Contract is fixing the interface of a class so that the users of the class and the class programmers can work independently.
- 3) Encapsulation occurs when the details of an implementation are hidden.
- \*4) Instantiation is creating a new object from a class.

12.(VB4)

- 1) An overloaded method can be overridden.
- 2) A method can be overridden regardless of whether or not it returns a value.
- 3) Protected methods can be overridden.
- \*4) Java key word 'final' prevents overriding methods by subclasses.

13.(IVA)

- 1) This is not an array declaration: [ ] is missing.
- 2) String and char are different data types.
- 3) Array size is not specified.
- \*4) Correct statement; it has both an array declaration and allocation.

14.(IVB2)

- \*1) The binary search method eliminates at least half of the array after each comparison. Binary search divides the problem into smaller problems and conquer by solving these problems. After solving the problems the results are combined together.
- 2) There is no such technique.
- 3) There is no particular direction of search in the binary search.
- 4) See 3).

\*correct answer

#### 15.(IVD)

- 1) This expression would generate a syntax error, since the < operator cannot be used to compare objects.
- 2) This expression would be true if the contents of s1 are smaller than or equal to the contents of s2.
- 3) This expression would be true if the contents of s1 are greater than the contents of s2.
- \*4) This is the correct expression to determine if s1 is smaller than s2.**

#### 16.(VIA)

- \*1) The File class contains methods used to write data to a file on a disk.**
- 2) Bigger arrays can be created regardless of whether or not they are stored in files.
- 3) File content can be sorted, but it does not have to be.
- 4) Files are system resources; their use increases the use of system resources, not reduces it.

#### 17.(VIB)

- 1) Integers can be read using the nextInt method. It returns the next integer number.
- 2) next reads the next token, whether it is a number or not.
- 3) nextInt is a datafield where nextInt() is a method.
- \*4) nextDouble() reads the next decimal number from the keyboard, (int) casts the number to an integer discarding the digits following the decimal point. This integer value is then assigned to int n.**

#### 18.(VIC)

- 1) Compilers cannot enforce or check this condition.
- 2) This does not cause a run-time error.
- \*3) The close( ) method must be invoked to ensure that the data are written to the file correctly.**
- 4) An IOException will not occur if the file is not an explicit call to the close method.

\*correct answer

## SECTION FIVE

# Taking the Exam

## Registering for Your Exam

### Register Online

[www.excelsior.edu/examregistration](http://www.excelsior.edu/examregistration)

Follow the instructions and pay by Visa, MasterCard, American Express, or Discover Card.

### Examination Administration

Pearson Testing Centers serve as the administrator for all Excelsior College computer-delivered exams.

### Accessibility Services

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Before taking your exam, we strongly encourage you to go on a virtual tour of the testing center. To access this tour, click the What to Expect in a Pearson VUE test center at the following link: [home.pearsonvue.com/test-taker/security.aspx](http://home.pearsonvue.com/test-taker/security.aspx)

You also will receive a small, erasable whiteboard if you need one.

### Breaks

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### Online Proctoring

As of spring 2021, Excelsior is offering an [online delivery option](#) for UExcel exams, using OnVUE, Pearson VUE's online delivery and proctoring service.

You must use a personal (vs. an employer's) computer if you want to take the exam online and not in a testing center, so the exam can be effectively delivered to you.

Breaks are not allowed during an exam taken online from home. You may not leave your seat during an online-proctored exam, so be prepared to sit for two or three hours. If you need extra time, the exam will have to be taken at a PearsonVUE Testing Center, and an accommodation formally requested.

NOTE: English Composition, Spanish, Music, and College Writing will NOT be available for online proctoring.

## On the Day of Your Exam

### Important Reminders

On the day of your exam, remember to:

- dress comfortably: the computer will not mind that you're wearing your favorite relaxation outfit
- arrive at the test site rested and prepared to concentrate for an extended period
- allow sufficient time to travel, park, and locate the test center
- be prepared for possible variations in temperature at the test center due to weather changes or energy conservation measures
- bring your ID, but otherwise, don't weigh yourself down with belongings that will have to be kept in a locker during the test.

### Academic Integrity Nondisclosure Statement

- All examinees must agree to the terms of the Excelsior College Academic Integrity Policy before taking an examination. The agreement will be presented on screen at the Pearson VUE Testing Center before the start of your exam.
- Once the examinee agrees to the terms of the Academic Integrity Nondisclosure Agreement (NDA), the exam will begin.

If you choose not to accept the terms of the agreement

- your exam will be terminated
- you will be required to leave the testing center
- you will not be eligible for a refund. For more information, review the Student Policy Handbook at [www.excelsior.edu/studentpolicyhandbook](http://www.excelsior.edu/studentpolicyhandbook).

Student behavior is monitored during and after the exam. Electronic measures are used to monitor the security of test items and scan for illegal use

of intellectual property. This monitoring includes surveillance of Internet chat rooms, websites, and other public forums.

### UExcel Grade Report

After you complete the exam, you will be issued a UExcel Grade Report for Examinations. See the [sample UExcel Grade Report](#) in this content guide.

### Grade Appeals

If you believe that your score grade is incorrect, you may appeal your grade to [examcredit@excelsior.edu](mailto:examcredit@excelsior.edu). Details about the appeals process are in the [Student Handbook](#).

### What If I Miss My Appointment?

If you don't cancel or reschedule your testing appointment 24 hours before your test appointment, you will have to pay the full fee of the exam, even if you don't show up.

### Late Arrivals

You will also forfeit the exam fee if you arrive to the test center more than 15 minutes late.

### Information About UExcel Exams for Colleges and Universities

A committee of teaching faculty and practicing professionals determines the learning outcomes to be tested on each exam. Excelsior College Center for Educational Measurement staff oversee the technical aspects of test construction in accordance with current professional standards. To promote fairness in testing, we take special care to ensure that the language used in the exams and related materials is consistent, professional, and user friendly. Editorial staff perform systematic quantitative and qualitative reviews to ensure accuracy, clarity, and compliance with conventions of bias-free language usage.

Excelsior College, the test developer, recommends granting three (3) semester hours of lower-level undergraduate credit to students who receive a letter grade of C or higher on this examination. Other colleges and universities also recognize this exam as a basis for granting credit or advanced standing.

Individual institutions set their own policies for the amount of credit awarded and the minimum acceptable grade.

## Introduction to Computer Programming Using Java Exam Development Committee

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# Sample Grade Report

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Excelsior College  
GRADE REPORT FOR EXAMINATIONS

Contact ID:

Test Date: 11/21/2020

Letter Grade: C

Examination Code and Title: 210 Statistics

Recommended Credit:  
3 Lower Level

Your examination results are expressed as a Letter Grade of A, B, C, or F. Your results are automatically verified when they are received at Excelsior College. If an error is detected, you will be notified immediately.

**Recommended Credit** is the number of semester hours credit that Excelsior College awards and recommends for your grade. Excelsior College awards and recommends credit for letter grades of C or better.

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