

Java 10 Programming

Section	Title	Page
One	Introduction to Java	2
	– Usage of Java	3
	– Structure of Java	4
	– Flexibility of Java Programming	5
Two	Using Java in Dos	6
	– Using the DOS Window	7
	– DOS Operating System Commands	8
	– Compiling and Executing Java Programs in DOS	10
	– Using JAVAC to Compile Java Programs	11
	– <i>Exercise One</i>	16
Three	First Steps to Programming in Java	18
	– Anatomy of Java Programming	19
	– Using System.out.println in Java	23
	– Passing Arguments in a Java Program	25
	– Packages in Java Programming	26
	– Naming Java modules	27
	– Commenting in Java Programs	28
	– Case Sensitivity in Java	29
	– Syntax Rules in Java 11 Programming	30
	– <i>Exercise Two</i>	31
Four	Java Strings	32
	– Introduction	33
	– Using Escape Characters	34
	– Concatenation of Strings	37
	– Using Methods with Strings	38
	– Methods with Parameters / Arguments	39
	– Selecting Substrings	40
	– Finding the Index	41
	– Finding the Index of a Substring	43
	– Finding the Length of a String	47
	– Capitalizing Strings Example	48
	– <i>Exercise Three</i>	49
	Five	Numbers in Java
– Performing Calculations		53
– Calculations and Concatenation		55
– Calculations and Precedence		56
– Using Concatenation with Numbers		57
– Using Methods with Numbers		59
	– <i>Exercise Four</i>	62
Six	Creating Variables in Java	63
	– Introduction	64
	– Naming Conventions	66
	– Using Final to create a Constant value	70
	– Primitive Datatypes	72
	– byte Datatype	73
	– long Datatype	74
	– short Datatype	76
	– int Datatype	77
	– float Datatype	78
– double Datatype	79	

Java 10 Programming

Section	Title	Page
	- Compatibility between Primitive Datatypes	80
	- Casting between Primitive Datatypes	81
	- Casting and Converting Values	82
	- byte Casting	83
	- double Casting	84
	- int Casting	85
	- long Datatype	86
	- float Casting	87
	- short Casting	88
	- char Datatype	89
	- char Casting	90
	- String Casting	91
	- boolean Datatype	92
	- Manipulating Variables	93
	- Incrementing Variables with Postfix	97
	- Postfix versus Prefix	98
	- Number Formatting in Java	99
	- <i>Exercise Five</i>	107
Seven	Wrapper Classes in Java	111
	- Introduction	112
	- Using MAX_VALUE	114
	- Declaring Wrappers	115
	- Populating Wrapper Classes	116
	- Postfix Wrappers	120
	- Number Formatting	121
	- Converting Numeric Wrappers	122
	- Converting Numeric Wrappers to String	123
	- String to Numeric Datatypes (decode)	124
	- String to Numeric Datatypes (parseInt)	125
	- String to Numeric Datatypes (valueOf)	126
	- Numeric Datatypes to String using valueOf()	127
	- Character Class Methods in Java	128
	- Converting String to char	129
	- <i>Exercise Six</i>	130
Eight	Conditional Tests	132
	- Making Decisions in Java	133
	- Testing Booleans in Java	140
	- Else Conditions in Java	142
	- Else if Conditions in Java	143
	- Nesting Conditions in Java	144
	- Ternary if-else Operator	145
	- Case Switch Conditions	147
	- Using Break in Java Switches	149
	- Using Java Switches with Strings (v7+)	151
	- Using Java Switches with Bytes (v7+)	152
	- Using Java Switches with Shorts (v7+)	153
	- Using Java Switches with Wrappers (v7+)	154
	- Compound Conditions in Java	155
	- AND Conditions in Java (&&)	156
	- OR Conditions in Java ()	157

Java 10 Programming

Section	Title	Page
	- XOR Conditions in Java (^)	158
	- Short-circuiting Conditions in Java	159
	- <i>Exercise Seven</i>	161
Nine	Conditional Tests with Wrappers	165
	- Class Conditions	166
	- Class Methods	168
	- String Class Methods	169
	- Character Class Methods	171
	- Boolean Class Methods	173
	- <i>Exercise Eight</i>	174
Ten	Arrays	176
	- Array Variables in Java	177
	- Declaring Arrays in Java ([])	178
	- Using copyOf to extend an array	182
	- Declaring Empty Arrays in Java ([])	183
	- Populating Arrays in Java	184
	- Multi-Dimensional Arrays	185
	- Defining Multi-Dimensional Arrays	186
	- Populating Multi-Dimensional Arrays	188
	- Cloning Arrays	190
	- Converting Char Arrays to Strings	191
	- Converting Strings to Arrays	192
	- Sorting Arrays	193
	- <i>Exercise Nine</i>	194
Eleven	Object	197
	- The Object Superclass in Java	198
	- Creating and utilising Objects	199
Twelve	Looping	200
	- Looping Methods in Java	201
	- While Looping in Java	202
	- Do While Looping in Java	204
	- For Looping in Java	205
	- For-Each Looping in Java	206
	- Nested Looping in Java	207
	- Branching in Looping in Java	208
	- Continue Looping in Java	209
	- Break Looping in Java	211
	- Labelling Looping in Java	212
	- The Break Statement in Java	213
	- Breaking with a Loop Label	214
	- Continuing with a Loop Label	215
Thirteen	Passing Arguments	216
	- Sending Arguments to Methods	217
	- Using length with arguments	219
	- <i>Exercise Ten</i>	221
Fourteen	Multiple Methods	226
	- Introduction	227
	- Multiple Methods	228
	- Overloading	233
	- Returning Values in Java	236

Java 10 Programming

Section	Title	Page
	– Returning Wrappers in Java	243
	– Returning Arrays in Java	244
	– Using varargs in Java	245
	– Definition of scope	246
	– <i>Exercise Eleven</i>	249
Fifteen	Multiple Classes	251
	– Multiple Classes / Single File	252
	– Multiple Classes	254
	– Accessing Variables	255
	– Nested Classes	256
	– Finalising Class Variables	260
	– Accessing from other Classes	261
	– <i>Exercise Twelve</i>	263
Sixteen	Packages in Java	267
	– Introduction	268
	– Multi-Level Packages	269
	– Accessing and Importing Packages	271
	– <i>Exercise Thirteen</i>	275
Seventeen	Regular Expressions in Java	276
	– Introduction	277
	– Line Anchors	280
	– Case Sensitivity	281
	– Using the Dot (Any Character)	282
	– Counting Characters {Intervals}	284
	– Character Range Lists	287
	– Excluding Character Lists	291
	– Metacharacters in Java	292
	– Or Patterns (Alternatives)	293
	– Using the Question Mark (Optional)	295
	– Using the Plus sign (Mandatory)	297
	– Using the Star sign (Optional)	298
	– Negative Lookahead	299
	– POSIX in Java	300
	– Using String methods for Regex – matches()	302
	– Using String methods for Regex – replaceAll()	303
	– Using String methods for Regex – replaceFirst()	304
	– Using String methods for Regex – split()	305
	– <i>Exercise Fourteen</i>	307
Eighteen	Vectors	312
	– Using Vectors in Java	313
	– Populating Vectors using add() method	314
	– Populating Vectors using addAll() method	315
	– Counting number of values in a Vector	317
	– Accessing values in a Vector	318
	– Using Loops with Vectors	319
	– Changing existing values in a Vector	320
	– Sorting values in a Vector	321
	– Miscellaneous methods to use with Vectors	322
	– Using Vectors in Java	323
Nineteen	Hashtables	324

Java 10 Programming

Section	Title	Page
	– Creating Hashtables	325
	– Populating Hashtables	326
	– Accessing values in a Hashtable	327
	– Accessing values in Hashtables with For-Each	328
	– Some useful methods for Hashtables	329
Twenty	Enumeration	330
	– Introduction	331
	– Using Enumeration	332
Twenty One	Concepts of OOPS	334
	– Introduction	335
	– Classes and Instances (Instantiation)	336
	– Constructor	337
	– Polymorphism	340
	– Inheritance	342
	– IS-A	344
	– Overriding and Overloading	345
	– Extends	346
	– Interfaces and Implementation	347
	– Abstraction	348
	– Encapsulation	349
	– Packages	350
Twenty Two	Interfaces	351
	– Introduction	352
	– Implementing Interfaces	353
	– The Hierarchy of Interfaces Using Extends	355
	– The purpose of @Override	356
Twenty Three	Access Methods in Java	358
	– Class Access Levels in Java	359
	– Method Access Levels in Java	360
	– Variable Access Levels in Java	363
Twenty Four	Using OOPS in Java	364
	– Introduction	365
	– Instances and Constructors	366
	– The 'This' keyword	369
	– Overriding and Extending Classes	376
	– Using the Super keyword	384
	– <i>Exercise Fifteen</i>	385
Twenty Five	Exception Handling in Java	391
	– Error Handling in Java	392
	– Trying Exceptions in Java	393
	– Catching Exceptions in Java	394
	– Throw Exceptions in Java	401
	– Using Finally in Java	404
	– Throws and Modular Programming	405
	– <i>Exercise Sixteen</i>	416
Twenty Six	Using Java Swing	417
	– Introduction	418
	– Using Dialog Boxes	419
	– Using Message Dialogs	421
	– Using Confirm Dialogs	426

Java 10 Programming

Section	Title	Page
	– Using Input Dialogs	429
	– Using Icons in Java	431
	– Using ImageIcon in Java	432
	– Using Option Dialogs	433
	– <i>Exercise Seventeen</i>	439
Twenty Seven	Enums	442
	– Introduction	443
	– Declaring a basic Enum	444
	– Testing Enums	447
	– Using the values() method with Enums	448
	– Creating methods in Enums	449
	– <i>Exercise Eighteen</i>	456
Twenty Eight	HashMaps	457
	– Creating HashMaps	458
	– Populating HashMaps	459
	– Populating HashMaps using putAll()	460
	– Accessing values in HashMaps	461
	– Accessing values in HashMaps with For-Each	462
	– Accessing keys in HashMaps with For-Each	463
	– Some useful methods for HashMaps	464
Twenty Nine	Arraylist	465
	– Creating ArrayLists	466
	– Populating an ArrayList	467
	– Populating an ArrayList with addAll	469
	– Counting number of values in an ArrayList	470
	– Accessing values in an ArrayList	471
	– Using Loops with ArrayLists	472
	– Changing existing values in an ArrayList	473
	– Sorting values in an ArrayList	474
Thirty	Iterator	475
	– Introduction	476
	– Using Iterator	477
	– Using Iterator with remove()	478
	– Using ListIterator	479
	– <i>Exercise Nineteen</i>	480
Thirty One	Dates in Java	484
	– Using Dates in Java	485
	– Date and Time Variables	487
	– currentTimeMillis()	489
	– DateFormat in Java	490
	– Placing Strings into Dates	493
	– SimpleDateFormat Method	495
	– getTimeInstance Method in Java	498
	– SimpleDateFormat Method for Time in Java	501
Thirty Two	Calendars in Java	503
	– Calendar Class in Java	504
	– Leniency in Calendars	509
	– Populating Calendars	510
	– Populating Calendars using set()	512
	– Changing Calendars using add()	513

Java 10 Programming

Section	Title	Page
	– Gregorian Calendar in Java	515
	– <i>Exercise Twenty</i>	519
Thirty Three	System Properties	522
	– Using System Properties in Java	523
	– List of System Properties in Java	524
	– System.getProperty	525
Thirty Four	File Handling in Java	526
	– File Handling in Java	527
	– Reading from Files in Java	529
	– Using the Buffered Reader	533
	– Writing to Files in Java	535
	– Using the BufferedWriter in Java	537
	– <i>Exercise Twenty One</i>	538
Thirty Five	Reading XML Files	540
	– Introduction	541
	– Example of an XML file	542
	– Getting the Elements of the File	543
Thirty Six	Reading and Writing Zip Files in Java	549
	– Introduction	550
	– Counting Files in a Zip File	551
	– Naming Files in a Zip File	552
	– Reading Contents of a Zip using Enumeration	553
	– Reading Contents of a Zip using a ZipEntry	555
	– Writing to a Zip File	557
Thirty Seven	Accessing MySQL Databases in Java	560
	– Introduction	561
	– Running Java and MySQL on the Command Line	562
	– Counting Records in MySQL	566
	– Displaying Tables in MySQL	569
	– Displaying Table Structure in MySQL	570
	– Displaying Records in MySQL	572
	– Using the 'get' method with the ResultSet	574
	– Updating records in MySQL	575
	– Deleting and Inserting records in MySQL	576
	– Date Formats for MySQL	577
	– Performing DDL in MySQL with Java	578
	– Creating, Altering and Dropping MySQL Tables	579
	– <i>Exercise Twenty Two</i>	581
Thirty Eight	Accessing Oracle Databases in Java	586
	– Introduction	587
	– Using Oracle	588
	– Running Java and Oracle on the Command Line	589
	– Counting Records in Oracle	592
	– Displaying Tables in a User	595
	– Displaying Columns in a Table	597
	– Displaying Records in Oracle	601
	– Updating records in Oracle	603
	– Deleting and Inserting records in Oracle	604
	– Inserting / Updating Dates in Oracle	605
	– Performing DDL in Oracle with Java	606

Java 10 Programming

Section	Title	Page
	- Creating, Altering and Dropping Oracle Tables	607
	- <i>Exercise Twenty Three</i>	609
Thirty Nine	Developer Defined Exceptions	614
	- Developer defined exceptions in Java	615
	- serialVersionUID	616
Forty	Creating JAR files	622
	- Introduction	623
	- Creating a simple Jar file	625
	- Viewing the contents of a Jar file	626
	- Extracting the contents of a Jar file	627
	- Incorporating a Jar file	628
Forty One	Using Javadoc	630
	- Documenting Java Programs	631
	- Using Javadoc	632
	- <i>Exercise Twenty Four</i>	649

