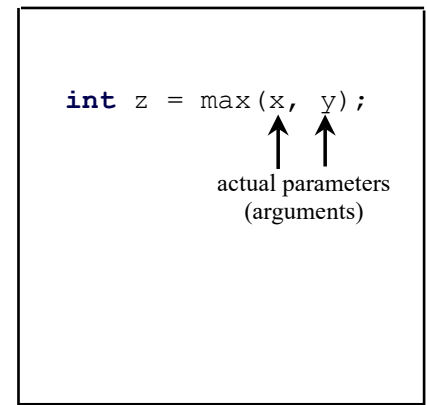
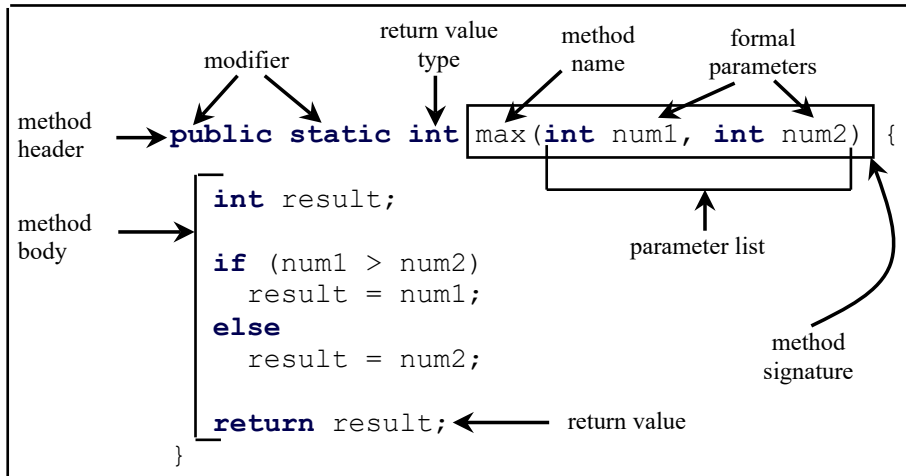


1 PKG 10: METHODS 02

Define a method

Invoke a method



Q1. In the below examples, line #19 -#108, please work with a classmate to identify the components listed a-j, to trace the data flow, and to explain the output:

- Actual parameter(s)
- Formal parameter(s)
- Method body
- Method header
- Method name
- Method signature
- Modifier(s)
- Parameter list
- Return value
- Return value type

```

19 public class LoopsVsMethods02 {
20
21     public static void main(String[] args) {
22         traverseBuilding(5, 5);
23         traverseBuilding(2, 5);
24         traverseBuilding(1, 8);
25         traverseBuilding(5, 3);
26     }
27
28     public static void traverseBuilding(int floors, int offices) {
29         System.out.println("Method STARTS");
30         for (int i = 0; i < floors; i++) {
31             System.out.print("Row " + i + ": ");
32             for (int j = 0; j < offices; j++) {
33                 System.out.print(j + " ");
34             }
35             System.out.println("");
36         }
37         System.out.println("Method ENDS\n");
38     }
39 }

```

Method STARTS

```

Row 0: 0 1 2 3 4
Row 1: 0 1 2 3 4
Row 2: 0 1 2 3 4
Row 3: 0 1 2 3 4
Row 4: 0 1 2 3 4

```

Method ENDS

Method STARTS

```

Row 0: 0 1 2 3 4
Row 1: 0 1 2 3 4

```

Method ENDS

Method STARTS

```

Row 0: 0 1 2 3 4 5 6 7

```

Method ENDS

Method STARTS

```

Row 0: 0 1 2
Row 1: 0 1 2
Row 2: 0 1 2
Row 3: 0 1 2
Row 4: 0 1 2

```

Method ENDS

Happy Coding!

```
47
48 public class MethodDemo {
49
50     public static int sum(int i1, int i2) {
51         int result = 0;
52         for (int i = i1; i <= i2; i++) {
53             result += i;
54         }
55
56         return result;
57     }
58
59     public static void main(String[] args) {
60         System.out.println("Sum from 1 to 10 is " + sum(1, 10));
61         System.out.println("Sum from 20 to 37 is " + sum(20, 37));
62         System.out.println("Sum from 35 to 49 is " + sum(35, 49));
63     }
64 }
65
```

Sum from 1 to 10 is 55
Sum from 20 to 37 is 513
Sum from 35 to 49 is 630

```
66
67 public class TestReturnGradeMethod {
68
69     public static void main(String[] args) {
70         System.out.print("The grade is " + getGrade(78.5));
71         System.out.println("");
72         System.out.print("The grade is " + getGrade(59.5));
73     }
74
75     public static char getGrade(double score) {
76         if (score >= 90.0) {
77             return 'A';
78         } else if (score >= 80.0) {
79             return 'B';
80         } else if (score >= 70.0) {
81             return 'C';
82         } else if (score >= 60.0) {
83             return 'D';
84         } else {
85             return 'F';
86         }
87     }
88 }
89
```

The grade is C
The grade is F

```
90
91 public class Increment {
92
93     public static void main(String[] args) {
94         int x = 1;
95         System.out.println("Before the call, x is " + x);
96         increment(x);
97         System.out.println("After the call, x is " + x);
98     }
99
100     public static void increment(int n) {
101         n++;
102         System.out.println("n inside the method is " + n);
103     }
104 }
105
106
107
108
```

Before the call, x is 1
n inside the method is 2
After the call, x is 1

- 110
- 111 Q2. Please work with a classmate
- 112 - Outline your solutions to Challenge 1 of PKG 09
- 113 - Explain to each in detail the methods you are using
- 114
-

- 115
- 116 Q3. Please work with a classmate
- 117 - Discuss ASMT 02 challenges and approaches to solve the challenges
- 118 - Discuss the methods which we can use to structure answer to the E.C. part
- 119
-

- 120
- 121 Q4. Recode
- 122 - ASMT 01 using methods
- 123 - ASMT 02 using methods
- 124
-

- 125
- 126 Q5. Please work with a classmate
- 127
- 128 1. Suppose your method does not return any value, which of the following keywords can
- 129 be used as a return type?
- 130 a. void b. int c. double d. public e. None of the above
- 131
- 132 2. The signature of a method consists of _____.
- 133 a. method name b. method name and parameter list
- 134 c. return type, method name, and parameter list d. parameter list
- 135
- 136 3. All Java applications must have a method _____.
- 137 a. public static Main(String[] args) b. public static Main(String args[])
- 138 c. public static void main(String[] args) d. public void main(String[] args)
- 139 e. public static main(String[] args)
- 140
- 141 4. Arguments to methods always appear within _____.
- 142 a. brackets b. parentheses c. curly braces d. quotation marks
- 143
- 144 5. Does the return statement in the following method cause compile errors?
- 145 public static void main(String[] args) {
- 146 int max = 0;
- 147 if (max != 0)
- 148 System.out.println(max);
- 149 else
- 150 return;
- 151 }
- 152 a. Yes b. No
- 153
- 154 6. Does the method call in the following method cause compile errors?
- 155 public static void main(String[] args) {
- 156 Math.pow(2, 4);
- 157 }
- 158 a. Yes b. No
- 159
- 160 7. Each time a method is invoked, the system stores parameters and local variables in
- 161 an area of memory, known as _____, which stores elements in last-in first-out
- 162 fashion.
- 163 a. a heap b. storage area c. a stack d. an array
- 164
- 165 8. Which of the following should be defined as a void method?
- 166 a. Write a method that prints integers from 1 to 100.
- 167 b. Write a method that returns a random integer from 1 to 100.
- 168 c. Write a method that checks whether a number is from 1 to 100.
- 169 d. Write a method that converts an uppercase letter to lowercase.
- 170

171 9. You should fill in the blank in the following code with _____.

```

172 public class Test {
173     public static void main(String[] args) {
174         System.out.print("The grade is ");
175         printGrade(78.5);
176
177         System.out.print("The grade is ");
178         printGrade(59.5);
179     }
180
181     public static _____ printGrade(double score) {
182         if (score >= 90.0) {
183             System.out.println('A');
184         }
185         else if (score >= 80.0) {
186             System.out.println('B');
187         }
188         else if (score >= 70.0) {
189             System.out.println('C');
190         }
191         else if (score >= 60.0) {
192             System.out.println('D');
193         }
194         else {
195             System.out.println('F');
196         }
197     }
198 }
199 a. int      b. double      c. boolean      d. char      e. void
200

```

201 10. You should fill in the blank in the following code with _____.

```

202 public class Test {
203     public static void main(String[] args) {
204         System.out.print("The grade is " + getGrade(78.5));
205         System.out.print("\nThe grade is " + getGrade(59.5));
206     }
207
208     public static _____ getGrade(double score) {
209         if (score >= 90.0)
210             return 'A';
211         else if (score >= 80.0)
212             return 'B';
213         else if (score >= 70.0)
214             return 'C';
215         else if (score >= 60.0)
216             return 'D';
217         else
218             return 'F';
219     }
220 }
221
222 a. int      b. double      c. boolean      d. char      e. void
223

```

224 11. Consider the following incomplete code:

```

225 public class Test {
226     public static void main(String[] args) {
227         System.out.println(f(5));
228     }
229
230     public static int f(int number) {
231         // Missing body
232     }
233 }

```

234 The missing method body should be _____.
 235 a. return "number"; b. System.out.println(number);
 236 c. System.out.println("number"); d. return number;
 237

238 12. When you invoke a method with a parameter, the value of the argument is passed to
 239 the parameter. This is referred to as _____.
 240 a. method invocation b. pass by value c. pass by reference d. pass by name
 241

242 13. Given the following method
 243
 244 static void nPrint(String message, int n) {
 245 while (n > 0) {
 246 System.out.print(message);
 247 n--;
 248 }
 249 }
 250

251 What is the output of the call nPrint('a', 4)?
 252 a. aaaaa b. aaaa c. aaa d. invalid call
 253

254 14. Given the following method
 255
 256 static void nPrint(String message, int n) {
 257 while (n > 0) {
 258 System.out.print(message);
 259 n--;
 260 }
 261 }
 262

263 What is k after invoking nPrint("A message", k)?
 264
 265 int k = 2;
 266 nPrint("A message", k);
 267 a. 0
 268 b. 1
 269 c. 2
 270 d. 3
 271

272 15. Analyze the following code:
 273
 274 public class Test {
 275 public static void main(String[] args) {
 276 System.out.println(xMethod(5, 500L));
 277 }
 278
 279 public static int xMethod(int n, long l) {
 280 System.out.println("int, long");
 281 return n;
 282 }
 283
 284 public static long xMethod(long n, long l) {
 285 System.out.println("long, long");
 286 return n;
 287 }
 288 }
 289

290 a. The program displays int, long followed by 5.
 291 b. The program displays long, long followed by 5.
 292 c. The program runs fine but displays things other than 5.
 293 d. The program does not compile because the compiler cannot distinguish which
 294 method to invoke.
 295
 296

```

297 16. Analyze the following code:
298 class Test {
299     public static void main(String[] args) {
300         System.out.println(xmethod(5));
301     }
302
303     public static int xmethod(int n, long t) {
304         System.out.println("int");
305         return n;
306     }
307
308     public static long xmethod(long n) {
309         System.out.println("long");
310         return n;
311     }
312 }
313 a. The program displays int followed by 5.
314 b. The program displays long followed by 5.
315 c. The program runs fine but displays things other than 5.
316 d. The program does not compile because the compiler cannot distinguish which xmethod
317 to invoke.
318
319 17. Analyze the following code.
320 public class Test {
321     public static void main(String[] args) {
322         System.out.println(max(1, 2));
323     }
324
325     public static double max(int num1, double num2) {
326         System.out.println("max(int, double) is invoked");
327
328         if (num1 > num2)
329             return num1;
330         else
331             return num2;
332     }
333
334     public static double max(double num1, int num2) {
335         System.out.println("max(double, int) is invoked");
336
337         if (num1 > num2)
338             return num1;
339         else
340             return num2;
341     }
342 }
343 a. The program cannot compile because you cannot have the print statement in a non-
344 void method.
345 b. The program cannot compile because the compiler cannot determine which max method
346 should be invoked.
347 c. The program runs and prints 2 followed by "max(int, double)" is invoked.
348 d. The program runs and prints 2 followed by "max(double, int)" is invoked.
349 e. The program runs and prints "max(int, double) is invoked" followed by 2.
350
351 18. A variable defined inside a method is referred to as _____.
352 a. a global variable b. a method variable c. a block variable d. a local variable
353
354 19. What is k after the following block executes?
355 {
356     int k = 2;
357     nPrint("A message", k);
358 }
359 System.out.println(k);

```