American University of Central Asia
Software Engineering Department

Programming I (COM 116), Structural Programming (COM-118)
Sample Midterm Examination

1. What is the name of the component that executes program instructions?

   a) CPU

   b) Memory

   c) Bus

   d) Disk

2. How many bits are there in a byte?

   a) *1*

   b) *2*

   c) *4*

   d) *8*

3. Which of the following are storage devices?

   a) Solid-state drive

   b) Hard disk drive

   c) USB flash drive

   d) Blu-ray disc

4. Select a list of types of memory ordered correctly from fastest to slowest.

   a) Memory / CPU registers / Disk drive

   b) Memory / Disk drive / CPU registers

   c) CPU registers / Memory / Disk drive

   d) Disk drive / Memory / CPU registers

5. What is the name of the program that manages hardware resources and programs on a computer?

   a) Compiler

   b) IDE

   c) JDK

   d) Operating system

   e) Debugger

6. What is the name of the company that created the Java programming language?

   a) Microsoft

   b) Google

   c) Sun Microsystems

   d) Oracle

7. Who is the current owner and maintainer of the Java language?

   a) Oracle

   b) Sun Microsystems

   c) Apple

   d) Intel

8. Who was the designer of the Java programming language?

   a) Bjarne Stroustrup

   b) James Gosling

   c) Dennis Ritchie

   d) John McCarthy

9. What should be the command to compile a Java source file *Main.java* into a program?

   a) *java Main.java*

   b) *java Main.class*

   c) *javac Main.java*

   d) *javac Main*

10. The Java compiler transforms Java sources into [   ]?

    a) Machine code

    b) Assembly language

    c) Java bytecode

    d) C source code

11. Central processing units can only execute [   ]?

    a) Java source code

    b) C source code

    c) Machine code

    d) Assembly language

12. What should be the command to start a Java program from a file *Main.class*?

    a) *java Main.class*

    b) *java Main*

    c) *javac Main.class*

    d) *javap Main.class*

13. Is it possible to run the same compiled Java program on machines with different types of CPUs?

    a) Yes

    b) No

14. Is it possible to run the same compiled Java program on machines with different operating systems?

    a) Yes

    b) No

15. How should a correct entry point of a Java program look like?

    a) *public static void Main(string[] args)*

    b) *public void main(String[] args)*

    c) *public static int main(String[] args)*

    d) *public static void main(String[] args)*

16. Which of the following are valid Java comments?

    a) *// This will compile*

    b) */* This will compile */*

    c) */** This /// will compile */*

    d) */* /* This will compile */ */*

Select the types of the programming errors in the following situations (questions 16–18).

17. Situation #1: It is not possible to compile a program.

    a) Compilation error

    b) Runtime error

    c) Logic error

18. Situation #2: The program does not produce a correct answer.

    a) Compilation error

    b) Runtime error

    c) Logic error

19. Situation #3: The program crashes during execution.

    a) Compilation error

    b) Runtime error

    c) Logic error

20. Which of the following are valid identifiers?

    a) $2732

    b) 2x

    c) true

    d) value

    e) 1+2

21. Which of the following are correct ways to declare variables?

    a) *int length, int width;*

    b) *int length; int width;*

    c) *int length, width;*

    d) *int length; width;*

22. What is the assignment operator in Java?

    a) *==*

    b) *!=*

    c) *=*

    d) *:=*

23. Which of the following assignment statements is incorrect?

    a) *i = j = k = 1;*

    b) *i = 1; j = 1; k = 1;*

    c) *i = 1 = j = 1 = k = 1;*

24. According to Java naming convention, which of the following names can be variables?

    a) *isOdd*

    b) *Main*

    c) *length*

    d) *PI*

    e) *false*

25. Which of the following is a constant, according to Java naming conventions?

    a) *radius*

    b) *pi*

    c) *MAX_FORCE*

    d) *Main*

26. Which of these data types requires the most amount of memory?

    a) *long*

    b) *short*

    c) *int*

    d) *byte*

27. What is the result of *40 / 3*?

    a) *13.333*

    b) *13.(3)*

    c) *10*

    d) *13*

28. What is the result of *40 % 3*?

    a) *0*

    b) *1*

    c) *0.(3)*

    d) *0.333*

29. Which of the following are the same as *1248.23453*?

    a) *1.24823453e+3*

    b) *0.124823453e+4*

    c) *124823453.0e-3*

    d) *124823453.0e-5*

30. The expression *2 + 10 / (4 - 1) * 5* is evaluated to

    a) *20*

    b) *17*

    c) *0*

    d) *25*

31. What is *x* after the following statements?

    ```
    int x = 3;
    int y = 4;
    x *= y + 1;
    ```

    a) *0*

    b) *12*

    c) *5*

    d) *15*

32. What is the value of *i* printed in the following code?

    ```
    int j = 0;
    int i = j++ + j * 5;

    System.out.println(i);
    ```

    a) *0*

    b) *1*

    c) *5*

    d) *6*

33. What will be displayed by the following code?

    ```
    double x = 5.5;
    int y = (int) x;
    System.out.println(
        "x is " + x +
        " and y is " + y
    );
    ```

    a) *x is 5 and y is 6*

    b) *x is 6.0 and y is 6.0*

    c) *x is 6 and y is 6*

    d) *x is 5.5 and y is 5*

    e) *x is 5.5 and y is 5.0*

34. What is the value of *(double) (5 / 2)*?

    a) *0.0*

    b) *2.0*

    c) *2.5*

    d) *2*

    e) *3*

35. What is the value of *(double) 5 / 2*?

    a) *0.0*

    b) *2.0*

    c) *2.5*

    d) *2*

    e) *3*

36. Which of the following assignment statements are illegal?

    a) *float x = -42;*

    b) *int x = 42;*

    c) *int x = 4.2;*

    d) *int x = (int) true;*

    e) *short x = 2;*

37. What is the equal comparison operator in Java?

    a) *=*

    b) *<>*

    c) *==*

    d) *!=*

    e) *^=*

38. What is *1 + 1 + 1 + 1 + 1 == 5*?

    a) *false*

    b) *true*

    c) There is no guarantee that it is *true*

39. What is *1.0 + 1.0 + 1.0 + 1.0 + 1.0 == 5.0*?

    a) *false*

    b) *true*

    c) There is no guarantee that it is *true*

40. In Java programming language, the word *true* is [   ].

    a) a Boolean literal

    b) same as value *1*

    c) same as value *0*

41. Suppose *x = 1*, *y = -1*, and *z = 1*. What will be displayed by the following statement?

    ```
    if (x > 0)
        if (y > 0)
            System.out.println("I");
    else if (z > 0)
        System.out.println("II");
    ```

    a) *I*

    b) *II*

    c) Nothing

42. Suppose *isPrime* is a boolean variable, which of the following is the correct and best statement for testing if *isPrime* is *true*.

    a) *if (isPrime = true)*

    b) *if (isPrime == true)*

    c) *if (isPrime)*

    d) *if (isPrime != false)*

43. What is the output of the following code?

    ```
    int a = 0;
    if (a < 4) {
        a += 1;
    }
    System.out.println(a);
    ```

    a) *0*

    b) *1*

    c) *2*

    d) The code will not compile

44. Analyze the following code

    ```
    // I
    int number = 42;
    boolean odd;

    if (number % 2 != 0)
        odd = true;
    else
        odd = false;

    // II
    int number = 42;
    boolean odd = (number % 2 != 0);
    ```

    a) Code (I) will not compile.

    b) Code (II) will not compile.

    c) Both will not compile

    d) Both are correct, but code (II) is better

45. Suppose income is 2001, what is the output of the following code:

    ```
    if (income > 1000) {
        System.out.println(">1000");
    } else if (income > 2000) {
        System.out.println(">2000");
    }
    ```

    a) no output

    b) *>1000*

    c) *>2000*

    d) *>1000* and *>2000*

46. Which of the following is the correct expression that evaluates to *true* if the number *x* is between 1 and 100 or the number is negative?

    a) *1 <x <100 && x <0*

    b) *(1 >x >100) || (x <0)*

    c) *((x <100) && (x >1)) || (x <0)*

    d) *((x <100) && (x >1)) && (x <0)*

47. What will be displayed by the following switch statement?

```
char c = 'a';
switch (c) {
    case 'a':
    case 'A':
        System.out.print(c);
        break;
    case 'b':
    case 'B':
        System.out.print(c);
        break;
    case 'c':
    case 'C':
        System.out.print(c);
        break;
    case 'd':
    case 'D':
        System.out.print(c);
}
```

   a) *abcd*
   b) *ab*
   c) *a*
   d) *b*
   e) *c*
   f) *d*

48. What is *y* after the following statement is executed?

```
x = 0;
y = (x > 0) ? 42 : −42;
```

   a) *42*
   b) *-42*
   c) *0*
   d) Will not compile

49. The order of the precedence (from high to low) of the operators *binary +, *, &&, ||* is

   a) *&&, ||, *, +*
   b) **, +, &&, ||*
   c) **, +, ||, &&*
   d) *||, &&, *, +*

50. What is the value of the following expression?

   true || true && false

   a) *true*
   b) *false*

51. How many times will the following code print "Hi"?

```
int i = 0;
while (i < 100) {
    System.out.println("Hi");
    i++;
}
```

   a) *1*
   b) *10*
   c) *100*
   d) *99*

52. How many times will the following code print "Hi"?

```
int i = 0;
while (i++ < 100) {
    System.out.println("Hi");
}
```

   a) *1*
   b) *10*
   c) *100*
   d) *99*

53. What is the output of the following code?

```
int i = 0;
while (i < 10) {
    i = i + 1;
}
System.out.println(i);
```

   a) *0*
   b) *1*
   c) *9*
   d) *10*

54. What will be displayed when the following code is executed?

```
int x = 10;
while (x > 0) {
    x −= 4;
    System.out.print(x + " ");
}
```

   a) *6 2*
   b) *6 2 -2*
   c) *10 6 4*
   d) *10 6 4 -2*

55. How many times will the following code print "Hi"?

```
int i = 0;
do {
    System.out.println("Hi");
} while (i++ < 100);
```

   a) *0*
   b) *99*
   c) *100*
   d) *101*

56. How many times will the following code print "Hi"?

```
int i = 0;
do {
    System.out.println("Hi");
} while (++i < 100);
```

   a) *0*
   b) *99*
   c) *100*
   d) *101*

57. Analyze the following code

```
double sum = 0;
for (double d = 0; d < 10;) {
    d += 0.1;
    sum += sum + d;
}
```

   a) The program has a compile error because the adjustment is missing in the for loop.
   b) The program has a compile error because the control variable in the for loop cannot be of the double type.
   c) The program runs in an infinite loop because *d <10* would always be *true*.
   d) The program compiles and runs fine.

58. Which of the following loops prints "Hi" 100 times?

```
// A
for (int i = 0; i < 100; i++) {
    System.out.println("Hi");
}
```

```
// B
for (int i = 1; i <= 100; i++) {
    System.out.println("Hi");
}
```

```
// C
for (int i = 0; i <= 100; i++) {
    System.out.println("Hi");
}
```

```
// D
for (int i = 1; i < 100; i++) {
    System.out.println("Hi");
}
```

   a) *A* and *B*
   b) *C* and *D*
   c) *A* and *C*
   d) *B* and *C*
   e) *A* and *B* and *C*

59. Do the following two loops in (I) and (II) result in the same value in sum?

```
// I
int sum = 0;
for (int i = 0; i < 42; ++i) {
    sum += i;
}
```

```
// II
int sum = 0;
for (int i = 0; i < 42; i++) {
    sum += i;
}
```

   a) No
   b) Yes

60. How many times is the *println* statement executed?

```
for (int i = 0; i < 10; i++) {
    for (int j = 0; j < i; j++) {
        System.out.println(i * j);
    }
}
```

   a) *10*
   b) *100*
   c) *55*
   d) *45*

61. What is *sum* after the following loop terminates?

```
int sum = 0;
int i = 0;
do {
    i++;
    sum += i;
    if (sum > 4) { break; }
} while (i < 5);
```

   a) *4*
   b) *5*
   c) *6*
   d) *7*

62. What is *sum* after the following loop terminates?

```
int sum = 0;
int i = 0;
do {
    i++;
    sum += i;
    if (sum >= 4) { continue; }
} while (i < 5);
```

   a) *14*
   b) *15*
   c) *16*
   d) *17*