

Introduction to object oriented programming
Workshop_week2

Go through the questions below and answer the questions:

1. Taking length and breadth of a rectangle from user and check if it is square or not.

1%1.70 GiB6.64 GB61%12

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Week_two.java
"Week_two.java" 187L, 5830B written
[0] 1:java* 2:bash-

172,8Bot

Week_two.java
"Week_two.java" 187L, 5830B written
[0] 1:java* 2:bash-

[nathan@archlinux Projects]\$ javac Week_two.java && java Week_two
Enter length and breadth:
2
2
It Is A Square
[nathan@archlinux Projects]\$

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2. Write a program to print the multiplication table of a number using user input.

1%1.72 GiB6.64 GB61%12

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Week_two.java
"Week_two.java" 187L, 5830B written
[0] 1:java* 2:bash-

173,8Bot

Week_two.java
"Week_two.java" 187L, 5830B written
[0] 1:java* 2:bash-

[nathan@archlinux Projects]\$ javac Week_two.java && java Week_two
Enter number to display multiplication table of:
3
3 x 0 = 0
3 x 1 = 3
3 x 2 = 6
3 x 3 = 9
3 x 4 = 12
3 x 5 = 15
3 x 6 = 18
3 x 7 = 21
3 x 8 = 24
3 x 9 = 27
3 x 10 = 30
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3. A college has following rules for grading system:

- a. 40 to 50 - C
- b. 50 to 60 - C+
- c. 60 to 70 - B
- d. 70 to 80 - B+

- e. 80 to 90 - A
- f. Above 90 - A+

Ask user to enter marks and print the corresponding grade using if-else-if statement.

0%1.71 GiB6.64 GB61%1 2

127 public void question_3(){
1 System.out.println("Enter marks: ");
2 Scanner scanner = new Scanner(System.in);
3 int l = scanner.nextInt();
4 if (l >= 40 && l <= 50) {
5 System.out.println("C");
6 } else if (l > 50 && l <= 60) {
7 System.out.println("C+");
8 } else if (l > 60 && l <= 70) {
9 System.out.println("B");
10 } else if (l > 70 && l <= 80) {
11 System.out.println("B+");
12 } else if (l > 80 && l <= 90) {
13 System.out.println("A");
14 } else if (l > 90) {
15 System.out.println("A+");
16 } else {
17 System.out.println("Invalid Marks ");
18 }
19 }
20 }
21 }
22 public void question_2(){
23 System.out.println("Enter number to display multiplication table of: ");
24 Scanner scanner = new Scanner(System.in);
25 int l = scanner.nextInt();
26 for (int i = 0; i<=10; i++) {
27 System.out.printf("%d x %d = %d\n",l,i,l*i);
28 }
29 }
30 }
31 public void question_1(){
32 System.out.println("Enter length and breadth: ");
33 Scanner scanner = new Scanner(System.in);
34 int l = scanner.nextInt();
35 int b = scanner.nextInt();
36 if (l == b) {
37 System.out.println("It Is A Square");
38 }else{
39 System.out.println("Nice Rectangle");
40 }
41 }
42 }

Week_two.java127,1787%
"Week_two.java" 187L, 5830B written
[0] 1:java* 2:bash-

[nathan@archlinux Projects]\$ javac Week_two.java && java Week_two
Enter marks:
99
A+
[nathan@archlinux Projects]\$

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4. Determine oldest and youngest among the people taking the user input.

0%1.71 GiB6.64 GB61%1 2

1 }
117 }
1 public void question_4(){
2 System.out.println("Enter ages of 3 people: ");
3 Scanner scanner = new Scanner(System.in);
4 int a = scanner.nextInt();
5 int b = scanner.nextInt();
6 int c = scanner.nextInt();
7 System.out.printf("Oldest: %d, Youngest: %d \n", Math.max(a, Math.max(b, c)), Math.min(a, Math.
min(b, c)));
8 }
9 }
10 public void question_3(){
11 System.out.println("Enter marks: ");
12 Scanner scanner = new Scanner(System.in);
13 int l = scanner.nextInt();
14 if (l >= 40 && l <= 50) {
15 System.out.println("C");
16 } else if (l > 50 && l <= 60) {
17 System.out.println("C+");
18 } else if (l > 60 && l <= 70) {
19 System.out.println("B");
20 } else if (l > 70 && l <= 80) {
21 System.out.println("B+");
22 } else if (l > 80 && l <= 90) {
23 System.out.println("A");
24 } else if (l > 90) {
25 System.out.println("A+");
26 } else {
27 System.out.println("Invalid Marks ");
28 }
29 }
30 }
31 }
32 public void question_2(){
33 System.out.println("Enter number to display multiplication table of: ");
34 Scanner scanner = new Scanner(System.in);
35 int l = scanner.nextInt();
36 for (int i = 0; i<=10; i++) {
37 System.out.printf("%d x %d = %d\n",l,i,l*i);
38 }
39 }
40 }

Week_two.java117,0-179%
"Week_two.java" 187L, 5830B written
[0] 1:java* 2:bash-

[nathan@archlinux Projects]\$ javac Week_two.java && java Week_two
Enter ages of 3 people:
10
20
30
Oldest: 30, Youngest: 10
[nathan@archlinux Projects]\$

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5. Ask student if he/she has medical cause or not ('y' or 'n'). if (‘y’) print you are not allowed to sit in the exam and if(‘n’)) print you can sit in the exam.

```
0% 1.71 GiB 6.64 GB 61% 1 2 HCK Connect 43 11:35 am

28 public void question_7(){
19     System.out.println("Enter a number: ");
18     Scanner scanner = new Scanner(System.in);
17     int userin = scanner.nextInt();
16     if (userin % 2 == 0 && userin % 4 == 0) {
15         System.out.println("Is even and divisible by 4");
14     }else if (userin % 7 == 0 && userin % 2 != 0){
13         System.out.println("Is odd and divisible by 7");
12     }else{
11         System.out.println("Is not divisible by both 4 and 7 ");
10     }
9 }
8
7 public void question_6(){
6     System.out.println("Enter a number: ");
5     Scanner scanner = new Scanner(System.in);
4     int userin = scanner.nextInt();
3     System.out.println( userin%2 == 0? "Even" : "Odd");
2 }
1
107 public void question_5(){
1     System.out.println("Do you got a medical cause?: ");
2     Scanner scanner = new Scanner(System.in);
3     char userin = scanner.next().charAt(0);
4     if (userin == 'y') {
5         System.out.println("You can't sit in the exam");
6         return;
7     }
8     System.out.println("Take your exam");
9 }
10
11 public void question_4(){
12     System.out.println("Enter ages of 3 people: ");
13     Scanner scanner = new Scanner(System.in);
14     int a = scanner.nextInt();
15     int b = scanner.nextInt();
16     int c = scanner.nextInt();
17     System.out.printf("Oldest: %d, Youngest: %d \n", Math.max(a, Math.max(b, c)), Math.min(a, Math.
18 min(b, c)));
19 }
20 public void question_3(){
21     System.out.println("Enter marks: ");
Week_two.java 187L, 5830B written 187,17 59%
[0] 1:java* 2:bash- "nathan@archlinux:~/Pr" 11:35 20-Jun-24
```

6. Write a program to check the odd and even numbers using user input.

```
1% 1.70 GiB 6.64 GB 61% 1 2 HCK Connect 43 11:35 am

21     grade = 'E';
20 } else {
19     grade = 'F';
18 }
17 System.out.println("\nPercentage: " + percentage + "%");
16 System.out.println("Grade: " + grade);
15 }
14
13 public void question_7(){
12     System.out.println("Enter a number: ");
11     Scanner scanner = new Scanner(System.in);
10     int userin = scanner.nextInt();
9     if (userin % 2 == 0 && userin % 4 == 0) {
8         System.out.println("Is even and divisible by 4");
7     }else if (userin % 7 == 0 && userin % 2 != 0){
6         System.out.println("Is odd and divisible by 7");
5     }else{
4         System.out.println("Is not divisible by both 4 and 7 ");
3     }
2 }
1
100 public void question_6(){
1     System.out.println("Enter a number: ");
2     Scanner scanner = new Scanner(System.in);
3     int userin = scanner.nextInt();
4     System.out.println( userin%2 == 0? "Even" : "Odd");
5 }
6
7 public void question_5(){
8     System.out.println("Do you got a medical cause?: ");
9     Scanner scanner = new Scanner(System.in);
10     char userin = scanner.next().charAt(0);
11     if (userin == 'y') {
12         System.out.println("You can't sit in the exam");
13         return;
14     }
15     System.out.println("Take your exam");
16 }
17
18 public void question_4(){
19     System.out.println("Enter ages of 3 people: ");
20     Scanner scanner = new Scanner(System.in);
21     int a = scanner.nextInt();
Week_two.java 188L, 5830B written 188,17 54%
[0] 1:java* 2:bash- "nathan@archlinux:~/Pr" 11:35 20-Jun-24
```

7. Write a program to check the number is odd or even, if the number is even, check whether it is divisible by 4, and if the number is odd, check whether it is divisible by 7 or not using user input.

```
21      double computerMarks = scanner.nextDouble();
22      double total = physicsMarks + chemistryMarks + biologyMarks + mathMarks + computerMarks;
19      double percentage = (total / 500) * 100;
18      char grade;
17      if (percentage >= 90) {
16          grade = 'A';
15      } else if (percentage >= 80) {
14          grade = 'B';
13      } else if (percentage >= 70) {
12          grade = 'C';
11      } else if (percentage >= 60) {
10          grade = 'D';
9      } else if (percentage >= 40) {
8          grade = 'E';
7      } else {
6          grade = 'F';
5      }
4      System.out.println("\nPercentage: " + percentage + "%");
3      System.out.println("Grade: " + grade);
2  }
1
87  public void question_7(){
1      System.out.println("Enter a number: ");
2      Scanner scanner = new Scanner(System.in);
3      int userin = scanner.nextInt();
4      if (userin % 2 == 0 && userin % 4 == 0) {
5          System.out.println("Is even and divisible by 4");
6      }else if (userin % 7 == 0 && userin % 2 != 0){
7          System.out.println("Is odd and divisible by 7");
8      }else{
9          System.out.println("Is not divisible by both 4 and 7 ");
10     }
11 }
12
13 public void question_6(){
14     System.out.println("Enter a number: ");
15     Scanner scanner = new Scanner(System.in);
16     int userin = scanner.nextInt();
17     System.out.println( userin%2 == 0? "Even" : "Odd");
18 }
19
20 public void question_5(){
21     System.out.println("Do you got a medical cause?: ");
Week_two.java 87,17 45%

[nathan@archlinux Projects]$ javac Week_two.java && java Week_two
Enter a number:
60
Is even and divisible by 4
[nathan@archlinux Projects]$
```

8. Write a program to input marks of five subjects Physics, Chemistry, Biology, Mathematics and Computer. Calculate percentage and grade according to following:

- Percentage $\geq 90\%$: Grade A
- Percentage $\geq 80\%$: Grade B
- Percentage $\geq 70\%$: Grade C
- Percentage $\geq 60\%$: Grade D
- Percentage $\geq 40\%$: Grade E
- Percentage $< 40\%$: Grade F

1%1.70 GiB6.64 GB61%12

6sum += (i % 2 ==0)? i:0;
5i++;
4}
3System.out.println(sum);
2}
1
55public void question_8(){
1Scanner scanner = new Scanner(System.in);
2System.out.println("Enter marks for Physics:");
3double physicsMarks = scanner.nextDouble();
4System.out.println("Enter marks for Chemistry:");
5double chemistryMarks = scanner.nextDouble();
6System.out.println("Enter marks for Biology:");
7double biologyMarks = scanner.nextDouble();
8System.out.println("Enter marks for Mathematics:");
9double mathMarks = scanner.nextDouble();
10System.out.println("Enter marks for Computer:");
11double computerMarks = scanner.nextDouble();
12double total = physicsMarks + chemistryMarks + biologyMarks + mathMarks + computerMarks;
13double percentage = (total / 500) * 100;
14char grade;
15if (percentage >= 90) {
16grade = 'A';
17}
18}
19}
20}
21}
22}
23}
24}
25}
26}
27}
28System.out.println("\nPercentage: " + percentage + "%");
29System.out.println("Grade: " + grade);
30}
31
32public void question_7(){
33System.out.println("Enter a number: ");
34Scanner scanner = new Scanner(System.in);
35int userin = scanner.nextInt();
36if (userin % 2 == 0 && userin % 4 == 0) {
Week_two.java55,1733%
"Week_two.java" 187L, 5830B written
[0] 1:java* 2:bash-

[nathan@archlinux Projects]\$ javac Week_two.java && java Week_two
Enter marks for Physics:
70
Enter marks for Chemistry:
70
Enter marks for Biology:
70
Enter marks for Mathematics:
70
Enter marks for Computer:
70

Percentage: 70.0%
Grade: C
[nathan@archlinux Projects]\$

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9. Write a program to sum first n even numbers using a while loop.

0%1.69 GiB6.64 GB61%12

21}
20}
19public void question_11() {
18int factorial;
17System.out.println("Enter n: ");
16Scanner scanner = new Scanner(System.in);
15int n = scanner.nextInt();
14for(factorial = 1;n>0;n--){
13factorial *= n;
12}
11System.out.println(factorial);
10}
9
8public void question_10() {
7String pattern = "";
6for(int i=0 ; i<=5 ; pattern+="*"){
5System.out.println(pattern);
4i++;
3}
2}
1
42public void question_9(){
1System.out.println("Enter n: ");
2Scanner scanner = new Scanner(System.in);
3int n = scanner.nextInt();
4int i = 0;
5int sum = 0;
6while(i <=n){
7sum += (i % 2 ==0)? i:0;
8i++;
9}
10System.out.println(sum);
11}
12
13public void question_8(){
14Scanner scanner = new Scanner(System.in);
15System.out.println("Enter marks for Physics:");
16double physicsMarks = scanner.nextDouble();
17System.out.println("Enter marks for Chemistry:");
18double chemistryMarks = scanner.nextDouble();
19System.out.println("Enter marks for Biology:");
20double biologyMarks = scanner.nextDouble();
21System.out.println("Enter marks for Mathematics:");
Week_two.java42,1713%
"Week_two.java" 187L, 5830B written
[0] 1:java* 2:bash-

[nathan@archlinux Projects]\$ javac Week_two.java && java Week_two
Enter n:
6
12
[nathan@archlinux Projects]\$

"nathan@archlinux:~/Pr" 11:37 20-Jun-24

10. Write a code to print a pattern below.

```
*
* *
* * *
* * * *
* * * * *
```

```
0% 1.70 GiB 6.64 GB 60% 1 2 HCK Connect 43 11:38 am

21 public void question_12() {
22     int i = 10;
23     while(i<20){
24         System.out.println(i);
25         if (i==15) {
26             break;
27         }
28         i++;
29     }
30 }
31
32 public void question_11() {
33     int factorial;
34     System.out.println("Enter n: ");
35     Scanner scanner = new Scanner(System.in);
36     int n = scanner.nextInt();
37     for(factorial = 1;n>0;n--){
38         factorial *= n;
39     }
40     System.out.println(factorial);
41 }
42
43 public void question_10() {
44     String pattern = "";
45     for(int i=0 ; i<=5 ; pattern+="*"){
46         System.out.println(pattern);
47         i++;
48     }
49 }
50
51 public void question_9(){
52     System.out.println("Enter n: ");
53     Scanner scanner = new Scanner(System.in);
54     int n = scanner.nextInt();
55     int i = 0;
56     int sum = 0;
57     while(i <=n){
58         sum += (i % 2 ==0)? i:0;
59         i++;
60     }
61     System.out.println(sum);
62 }
63
64 public void question_8(){
65     Week_two.java
66     "Week_two.java" 187L, 5830B written
67     [0] 1:nvim* 2:bash-
68     34,17 8%
69     "nathan@archlinux:~/Pr" 11:37 20-Jun-24
```

11. Write a program to find the factorial of a given number using for loops.

```
1% 1.72 GiB 6.64 GB 60% 1 2 HCK Connect 43 11:38 am

21 public class Week_two {
22     public void question_13() {
23         int i = 10;
24         while(i<20){
25             i++;
26             if (i == 15){
27                 continue;
28             }
29             System.out.println(i);
30         }
31     }
32     public void question_12() {
33         int i = 10;
34         while(i<20){
35             System.out.println(i);
36             if (i==15) {
37                 break;
38             }
39             i++;
40         }
41     }
42     public void question_11() {
43         int factorial;
44         System.out.println("Enter n: ");
45         Scanner scanner = new Scanner(System.in);
46         int n = scanner.nextInt();
47         for(factorial = 1;n>0;n--){
48             factorial *= n;
49         }
50         System.out.println(factorial);
51     }
52     public void question_10() {
53         String pattern = "";
54         for(int i=0 ; i<=5 ; pattern+="*"){
55             System.out.println(pattern);
56             i++;
57         }
58     }
59     public void question_9(){
60         System.out.println("Enter n: ");
61         Scanner scanner = new Scanner(System.in);
62     }
63     Week_two.java
64     23,17 0%
65     [0] 1:java* 2:bash-
66     "nathan@archlinux:~/Pr" 11:38 20-Jun-24
```

12.while loop to print numbers starting from 10 to 14 which will otherwise print element till 19. Initialized an int variable with a value of 10. Then in while loop, we're checking x as less than 20 and within while loop, we're printing the value of x and incrementing the value of x by 1. While loop will run until x becomes 15. Once x is 15, break statement will break the while loop and the program exits.


```
1% 1.72 GiB 6.64 GB 60% 1 2 HCK Connect 43 11:38 am

12 import java.util.Scanner;
11 public class Week_two {
10     public void question_13() {
9         int i = 10;
8         while(i<20){
7             i++;
6             if (i == 15){
5                 continue;
4             }
3             System.out.println(i);
2         }
1     }
13 public void question_12() {
1         int i = 10;
2         while(i<20){
3             System.out.println(i);
4             if (i==15) {
5                 break;
6             }
7             i++;
8         }
9     }
10 public void question_11() {
11     int factorial;
12     System.out.println("Enter n: ");
13     Scanner scanner = new Scanner(System.in);
14     int n = scanner.nextInt();
15     for(factorial = 1;n>0;n--){
16         factorial *= n;
17     }
18     System.out.println(factorial);
19 }
20
21 public void question_10() {
22     String pattern = "";
23     for(int i=0 ; i<=5 ; pattern+="*"){
24         System.out.println(pattern);
25         i++;
26     }
27 }
28
29 public void question_9(){
30     System.out.println("Enter n: ");
Week_two.java 13,17 Top
E492: Not an editor command: W
[0] 1: bash* 2: bash- "nathan@archlinux:~/Pr" 11:38 20-Jun-24
```

13. while loop to print elements from 10 to 19. Here we've initialized an int variable x with a value of 10. Then in the while loop, we're checking x as less than 20 and within while loop, we're printing the value of x and incrementing the value of x by 1. While loop will run until x becomes 15. Once x is 15, continue statement will jump the while loop while skipping the execution of the body and loop continues.

```
1% 1.73 GiB 6.64 GB 60% 1 2 HCK Connect 43 11:38 am

2 import java.util.Scanner;
1 public class Week_two {
3     public void question_13() {
1         int i = 10;
2         while(i<20){
3             i++;
4             if (i == 15){
5                 continue;
6             }
7             System.out.println(i);
8         }
9     }
10 public void question_12() {
11     int i = 10;
12     while(i<20){
13         System.out.println(i);
14         if (i==15) {
15             break;
16         }
17         i++;
18     }
19 }
20 public void question_11() {
21     int factorial;
22     System.out.println("Enter n: ");
23     Scanner scanner = new Scanner(System.in);
24     int n = scanner.nextInt();
25     for(factorial = 1;n>0;n--){
26         factorial *= n;
27     }
28     System.out.println(factorial);
29 }
30
31 public void question_10() {
32     String pattern = "";
33     for(int i=0 ; i<=5 ; pattern+="*"){
34         System.out.println(pattern);
35         i++;
36     }
37 }
38
39 public void question_9(){
40     System.out.println("Enter n: ");
Week_two.java 3,17 Top
[nathan@archlinux Projects]$ javac Week_two.java && java Week_two
11
12
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14
15
16
17
18
19
20
[nathan@archlinux Projects]$
[0] 1: nvim* 2: bash- "nathan@archlinux:~/Pr" 11:38 20-Jun-24
```