

1-3

```

tcssh380@tcssh380:~/LABZ$ gcc lab06.c
tcssh380@tcssh380:~/LABZ$ ./a.out
29
2.449494tcssh380@tcssh380:~/LABZ$ gcc
tcssh380@tcssh380:~/LABZ$ ./a.out
46
2.0000004.0000017.0000003.60555112.
06.c
tcssh380@tcssh380:~/LABZ$ ./a.out
82
sqrt of 4 2.000000
sqrt of 16 4.000001
sqrt of random 9.949874
sqrt of 13.1231 3.622582
sqrt of -166 12.884099
tcssh380@tcssh380:~/LABZ$ gcc lab06.c
tcssh380@tcssh380:~/LABZ$ ./a.out
17
sqrt of 4 is: 2.000000
sqrt of 16 is: 4.000001
sqrt of random is: 5.477226
sqrt of is: 13.1231 3.622582
sqrt of -166 is: 12.884099
tcssh380@tcssh380:~/LABZ$

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4-5

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30
31
32
33
34
35
36
37 void sqrtApproxOut(double n, double *m) {
38     double temp = fabs(n - (*m * *m));
39     if (fabs(temp) >= 0.0001) {
40         *m = (*m + (n / *m)) / 2;
41         sqrtApproxOut(n, m);
42     }
43 }
44
45
46 int main()
47 {
48     initRandom(); // Do not remove.
49     printf("%d\n", nextInt(101));
50     printf("sqrt of 4 is: %f\n", sqrtApprox(4));
51     printf("sqrt of 16 is: %f\n", sqrtApprox(16));
52     printf("sqrt of random is: %f\n", sqrtApprox(nextInt(101)));
53     printf("sqrt of is: 13.1231 %f\n", sqrtApprox(13.1231));
54     printf("sqrt of -166 is: %f\n", sqrtApprox(-166));
55     double x = 100202.12;
56     double *n = &x;
57     sqrtApproxOut(*n, n);
58     printf("%f", *n);
59     printf("sqrt %f\n", *n);
60     sqrtApproxOut(*n, n);
61     printf("sqrt %f\n", *n);
62     sqrtApproxOut(*n, n);
63     printf("sqrt %f\n", *n);
64     sqrtApproxOut(*n, n);
65     printf("sqrt %f\n", *n);
66     sqrtApproxOut(*n, n);
67     printf("sqrt %f\n", *n);
68     double y = 16;
69     double *m = &y;
70     sqrtApproxOut(*m, m);
71     printf("sqrt %f\n", *m);
72 }

```

6-7

```

43 }
44
45 void sqrtApproxInOut(double *n) {
46     double m = *n;
47     while (fabs(*n - (m * m)) >= 0.0001) {
48         m = (m + (*n / m)) / 2;
49     }
50     *n = m;
51 }
52
53 int main()
54 {
55     /*initRandom(); // Do not remove.
56     printf("%d\n", nextInt(101));
57     printf("sqrt of 4 is: %f\n", sqrtApprox(4));
58     printf("sqrt of 16 is: %f\n", sqrtApprox(16));

```

8-9

```

Home
tc380@tc380: ~/LABZ
initially lesser value: minPt 13.000000
initially greater value maxPt -10.000000
Updated pointers: minPt -10.000000
maxPt 13.000000
initially lesser value: minPt 10.000000
initially greater value maxPt -13.000000
Updated pointers: minPt 10.000000
maxPt -13.000000
tc380@tc380:~/LABZ$ gcc lab06.c
tc380@tc380:~/LABZ$ ./a.out
sqrt of 256 is 16.000000
4.000001
2.000000
sqrt of 12.023 is 3.467420
sqrt of 143 is 11.958261
initially lesser value: minPt 13.000000
initially greater value maxPt -10.000000
Updated pointers: minPt -10.000000
maxPt 13.000000
initially lesser value: minPt -13.000000
initially greater value maxPt 10.000000
Updated pointers: minPt -13.000000
maxPt 10.000000
tc380@tc380:~/LABZ$
44
45 void sqrtApproxInOut(double *n) {
46     double m = *n;
47     while (fabs(*n - (m * m)) >= 0.0001
48         m = (m + (*n / m)) / 2;
49     }
50     *n = m;
51 }
52
53 void minMax(double *a, double *b) {
54     if (*a > *b) {
55         double temp = *a;
56         *a = *b;
57         *b = temp;
58     }
59 }
60
61 int main()
62 {
63     /*initRandom(); // Do not remove.
64     printf("%d\n", nextInt(101));
65     printf("sqrt of 4 is: %f\n", sqrtApprox
66     printf("sqrt of 16 is: %f\n", sqrtApprox
67     printf("sqrt of random is: %f\n", sqrtA
68     printf("sqrt of is: 13.1231 %f\n", sqrt
69     printf("sqrt of -166 is: %f\n", sqrtApp
70     double x = 100202.12;
71     double *n = &x;

```

10-11

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(gdb) quit
tc380@tc380:~/LABZ$ gcc lab06.c
tc380@tc380:~/LABZ$ ./a.out
3, 3, 3, 3, 3, 3, 3, 3, 3, 3, 3, tc380@tc380:~/LABZ$
131
132 int *arrayInitialized = createArray(size, initVal);
133 for (unsigned int i = 0; i < size; i++) {
134     printf("%d, ", *(arrayInitialized + i));
135 }
136 free(arrayInitialized);

```

12-13

```

tc380@tc380:~/LABZ$ ./a.out
9, 10, 14, 13, 5, 9, 2, 1, 14, 3, tc380@tc380:~/LABZ$ gcc lab06.c
tc380@tc380:~/LABZ$ ./a.out
6, 9, 2, 4, 11, 10, 3, 1, 6, 0, tc380@tc380:~/LABZ$ gcc lab06.c
tc380@tc380:~/LABZ$ ./a.out
9, 4, 1, 0, 6, 11, 9, 14, 14, 5, tc380@tc380:~/LABZ$ gcc lab06.c
tc380@tc380:~/LABZ$ ./a.out
2, 14, 13, 4, 13, 14, 7, 12, 9, 1, tc380@tc380:~/LABZ$
View Previous Page
71 int* createArrayRand(int size, int exclusiveN) {
72     int *result = malloc(size * sizeof(int));
73     int i;
74     initRandom();
75     for (i = 0; i < size; i++) {
76         result[i] = rand() % exclusiveN;
77     }
78     return result;
79 }

```

14-15

```

tc380@tc380:~/LABZ$ ./a.out
11, 4, 9, 14, 1, 6, 9, 5, 3, 7,
3.316625, 2.000000, 3.000000, 3.741658, 1.000000, 2.449494, 3.000000, 2.236069, 1.732051, 2.645767, tc380@tc380:~/LABZ$ gcc lab06.c
tc380@tc380:~/LABZ$ ./a.out
12, 12, 3, 13, 14, 2, 3, 0, 12, 2,
3.464102, 3.464102, 1.732051, 3.605551, 3.741658, 1.414216, 1.732051, 0.000000, 3.464102, 1.414216, tc380@tc380:~/LABZ$ gcc lab06.c
tc380@tc380:~/LABZ$ ./a.out
13, 9, 10, 8, 7, 1, 14, 9, 11, 7,
3.606, 3.000, 3.162, 2.828, 2.646, 1.000, 3.742, 3.000, 3.317, 2.646, tc380@tc380:~/LABZ$ gcc lab06.c
tc380@tc380:~/LABZ$ ./a.out
10, 2, 8, 4, 4, 12, 13, 9, 13, 1,
3.16, 1.41, 2.83, 2.00, 2.00, 3.46, 3.61, 3.00, 3.61, 1.00, tc380@tc380:~/LABZ$
150 int *arrayInitialized2 = createArrayRand(size2, exclusiveN);
157 for (unsigned int i = 0; i < size2; i++) {
158     printf("%d, ", *(arrayInitialized2 + i));
159 }
160 printf("\n");
161 double *arrayOfSqrts = sqrtArray(size2, arrayInitialized2);
162 for (unsigned int i = 0; i < size2; i++) {
163     printf("%.2f, ", arrayOfSqrts[i]);
164 }
165 free(arrayOfSqrts);
166 free(arrayInitialized2);
167

```