

جواب سوال ۱

$$\blacksquare (255)_{10} = (11111111)_2 = (377)_8 = (FF)_{16} \quad (1)$$

$$\bullet 255 = 2^0 + 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 \Rightarrow (11111111)_2$$

$1 + 2 + 4 + 8 + 16 + 32 + 64 + 128$

$$\bullet \begin{array}{r} 255 \overline{) 8} \\ \underline{248} \\ 7 \end{array} \quad \begin{array}{r} 31 \overline{) 8} \\ \underline{24} \\ 7 \end{array} \quad \begin{array}{r} 31 \overline{) 8} \\ \underline{24} \\ 7 \end{array}$$

$$\bullet \begin{array}{r} 255 \overline{) 16} \\ \underline{240} \\ 15 \end{array} \quad \begin{array}{r} 15 \overline{) 16} \\ \underline{15} \\ 1 \end{array}$$

$$\blacksquare (31)_{10} = (11111)_2 = (37)_8 = (1F)_{16}$$

$$\bullet 31 = 2^0 + 2^1 + 2^2 + 2^3 + 2^4 \Rightarrow (11111)_2$$

$1 + 2 + 4 + 8 + 16$

$$\bullet \begin{array}{r} 31 \overline{) 8} \\ \underline{24} \\ 7 \end{array} \quad \begin{array}{r} 31 \overline{) 8} \\ \underline{24} \\ 7 \end{array}$$

$$\bullet \begin{array}{r} 31 \overline{) 16} \\ \underline{31} \\ 1 \end{array} \quad \begin{array}{r} 15 \overline{) 16} \\ \underline{15} \\ 1 \end{array}$$

$$\blacksquare (64)_{10} = (1000000)_2 = (100)_8 = (40)_{16}$$

$$\bullet 64 = 2^6 \Rightarrow (1000000)_2 \quad \bullet 64 = 8^2 \Rightarrow (100)_8$$

$$\bullet \begin{array}{r} 64 \overline{) 16} \\ \underline{64} \\ 0 \end{array} \quad \begin{array}{r} 64 \overline{) 16} \\ \underline{64} \\ 0 \end{array}$$

ادامه جواب سوال ۱

۱۶۲

$$\blacksquare (1023)_{10} = (\overset{?}{11111111})_2 = (\overset{?}{1777})_8 = (\overset{?}{3FF})_{16}$$

$$\bullet 1023 = 2^0 + 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + 2^6 + 2^7 + 2^8 + 2^9 \Rightarrow (1111111111)_2$$

$$\bullet \begin{array}{r|l} 1023 & 8 \\ \hline & 127 \\ \hline 7 & \dots \\ & 15 \\ \hline 7 & \dots \\ & 1 \\ \hline 7 & \dots \end{array}$$

$$\bullet \begin{array}{r|l} 1023 & 16 \\ \hline & 65 \\ \hline 3 & \dots \\ & 15 \\ \hline & \textcircled{15} \end{array}$$

$$\blacksquare (1024)_{10} = (\overset{?}{1000000000})_2 = (\overset{?}{2000})_8 = (\overset{?}{400})_{16}$$

$$\bullet 1024 = 2^{10} \Rightarrow (1000000000)_2$$

$$\bullet \begin{array}{r|l} 1024 & 8 \\ \hline & 128 \\ \hline 0 & \dots \\ & 16 \\ \hline 0 & \dots \\ & 2 \\ \hline & \textcircled{2} \end{array}$$

$$\bullet \begin{array}{r|l} 1024 & 16 \\ \hline & 64 \\ \hline 0 & \dots \\ & 16 \\ \hline 0 & \dots \\ & 4 \\ \hline & \textcircled{4} \end{array}$$

جواب سوال ۲

$$\blacksquare (1100100)_2 = (100)_?_{10} \quad (2)$$
$$\downarrow \quad \quad \quad \uparrow$$
$$2^2 + 2^5 + 2^6 = 100$$

$$\blacksquare (215)_8 = (141)_?_{10}$$
$$5 \times 8^0 + 1 \times 8^1 + 2 \times 8^2 = 5 + 8 + 128 = (141)_{10}$$

$$\blacksquare (1BA2)_{16} = (7074)_?_{10}$$

$$2 \times 16^0 + (A) \times 16^1 + (B) \times 16^2 + 1 \times 16^3$$
$$\quad \quad \quad 10 \times 16 \quad \quad 11 \times$$
$$2 + 160 + 2816 + 4096 = 7074$$

جواب سوال ۳

③

$$(10001110)_2 = (216)_8 = (8E)_{16}$$

$$\begin{array}{c} \underline{1000} \quad \underline{1110} \Rightarrow \underline{2} \quad \underline{1} \quad \underline{6} \\ 2^3 = 8 \end{array}$$

$$\begin{array}{c} \underline{1000} \quad \underline{1110} \Rightarrow \underline{8} \quad \underline{14} \\ 2^4 = 16 \end{array}$$

$$(714)_8 = (11001100)_2$$

$$\begin{array}{c} 714 \\ \swarrow \quad \downarrow \quad \searrow \\ \underline{111} \quad \underline{001} \quad \underline{100} \end{array} \quad 8 = 2^3$$

$$(ABC)_{16} = (10101011100)_2$$

$$\begin{array}{c} A \quad B \quad C \\ \swarrow \quad \downarrow \quad \downarrow \\ \underline{1010} \quad \underline{1011} \quad \underline{1100} \end{array} \quad 16 = 2^4$$

جواب سوال ۴

C test1.c ×

home > amin > Desktop > coding > C test1.c > main()

```
1  #include <stdio.h>
2
3  int main(){
4
5      int input;
6      float tmp;
7      printf("Enter Number: ");
8      scanf("%d", &input);
9      tmp = input / 8.0;
10     printf("%.4f\n", tmp);
11
12     return 0;
13 }
```

0.00amin@ai:~/Desktop/coding\$ gcc test1.c

amin@ai:~/Desktop/coding\$./a.out

Enter Number: 8

1.00

amin@ai:~/Desktop/coding\$ gcc test1.c

amin@ai:~/Desktop/coding\$./a.out

Enter Number: 10

1.25

amin@ai:~/Desktop/coding\$./a.out

Enter Number: 11

1.38

amin@ai:~/Desktop/coding\$./a.out

Enter Number: 0

0.00

amin@ai:~/Desktop/coding\$./a.out

Enter Number: -1

-0.12

amin@ai:~/Desktop/coding\$ gcc test1.c

amin@ai:~/Desktop/coding\$./a.out

Enter Number: 11

1.3750

amin@ai:~/Desktop/coding\$./a.out

Enter Number: -1

-0.1250

amin@ai:~/Desktop/coding\$./a.out

Enter Number: 100

12.5000

amin@ai:~/Desktop/coding\$

جواب سوال ۵

```
test1.c x
home > amin > Desktop > coding > test1.c > main(int, char * [])
1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main(int argc, char *argv[]){
5
6      float x = 0;
7      float avr = 0;
8      for (int i = 1; i < argc; i++){
9
10         x += atoi(argv[i]); // Casting String To Integer (Google)
11         avr = x / (argc - 1);
12     }
13     printf("Output: %.2f\n", avr);
14
15     return 0;
16 }
```

```
Activities Terminal
[+]
amin@ai:~/Desktop/coding$ ./a.out 1 23 4 52 12 54
Output: 24.33
amin@ai:~/Desktop/coding$
```

جواب سوال 6

home > amin > Desktop > coding > test1.c > main()

```
1  #include <stdio.h>
2
3  int main()
4  {
5      float input;
6      int int_input;
7      scanf("%f", &input);
8      printf("Input : %f\n", input);
9      int_input = input;
10     printf("Output: \n");
11     printf("1- %.1f\n", input);
12     printf("2- %.4f\n", input);
13     printf("3-  %.2f\n", input); // printf("%2.2f\n", input);
14     printf("4- %d\n", int_input);
15     printf("5- %e\n", input);
16
17     return 0;
18 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
amin@ai:~/Desktop/coding$ cd "/home/amin/Desktop/coding/" && gcc test1.c -o test1 && "/home/amin/Desktop/coding/"test1
234.4561
Input : 234.456100
Output:
1- 234.5
2- 234.4561
3- 234.46
4- 234
5- 2.344561e+02
amin@ai:~/Desktop/coding$
```

جواب سوال ۷

```
test1.c ×
home > amin > Desktop > coding > test1.c > main()
1  #include <stdio.h>
2
3  int main(){
4
5      int i = 32;
6      char c = 'd';
7      int sum = c - i;
8      printf("Value of sum : %d\n", sum );
9      printf("Value of sum : %c\n", sum );
10
11     return 0;
12 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
cd "/home/amin/Desktop/coding/" && gcc test1.c -o
amin@ai:~$ cd "/home/amin/Desktop/coding/" && gcc
Value of sum : 68
Value of sum : D
amin@ai:~/Desktop/coding$
```

در اینجا یک متغیر $i = 32$ و کاراکتر d داریم که هر دوی آن‌ها
در $d = 100$ که تقریباً این در دایر 32-100، نتیجه می‌دهد.
① $\%d \Rightarrow 68$
print sum:
② $\%c \Rightarrow D \Rightarrow 68$ که کسی 0 برابر 68