

Q 1

The screenshot shows a terminal window with the following content:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\mohit1717\Desktop\code\mohit1717\COA\Assignment 2> cd "c:\Users\mohit1717\Desktop\code\mohit1717\COA\Assignment 2\" ; if ($?) { &
Enter a decimal number: 12.5
IEEE-754 Single Precision Representation:
32-bit Format : 0 10000010 10010000000000000000000000000000
PS C:\Users\mohit1717\Desktop\code\mohit1717\COA\Assignment 2>
```

The terminal window displays the output of a C program that converts a decimal number to its IEEE-754 single precision binary representation. The user enters '12.5' and the program prints the 32-bit format as '0 10000010 10010000000000000000000000000000'.

Q 2

The screenshot shows a code editor interface with a dark theme. At the top, there are tabs for various files: 20jan.html, 25jan.html, C++ 1.cpp, ass2_1.c, ass2_2.c (highlighted in blue), ass2_3.c, ass2_4.c, ass2_5.c, ass2_6.c, and JS 2. On the left, there's a sidebar with icons for file operations like copy, paste, search, and refresh.

The main area contains the following C code:

```
COA > Assignment 2 > C ass2_2.c > decimalToBinary(double, int)
3 void decimalToBinary(double num, int bits) {
4     printf("Binary (up to %d bits): 0.", bits);
5
6     for (int i = 0; i < bits; i++) {
7         num *= 2;
8         int bit = (int)num;
9         printf("%d", bit);
10        num -= bit;
11    }
12    printf("\n");
13 }
14
15 int main() {
16     double nums[] = {0.1, 0.2, 0.3};
17     int bits = 20;
18
19     for (int i = 0; i < 3; i++) {
20         double x = nums[i];
21         float stored = (float)x;
22
23         printf("\nDecimal Value      : %.10f\n", x);
24         decimalToBinary(x, bits);
25         printf("Stored (float)    : %.10f\n", stored);
26         printf("Difference       : %.10e\n", stored - x);
27     }
28
29     return 0;
30 }
```

Below the code, there are tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL (which is selected), and PORTS. The TERMINAL tab displays the following output:

```
Decimal Value      : 0.1000000000
Binary (up to 20 bits): 0.00011001100110011001
Stored (float)      : 0.100000015
Difference         : 1.4901161138e-009

Decimal Value      : 0.2000000000
Binary (up to 20 bits): 0.00110011001100110011
Stored (float)      : 0.200000030
Difference         : 2.9802322277e-009
```

Q3

The screenshot shows a terminal window with the following content:

```
COA > Assignment 2 > ass2_3.c > ...
1 #include <stdio.h>
2
3 int main() {
4
5     double a = 0.1;
6     double b = 0.2;
7     double c = a + b;
8
9     printf("Expression 1: 0.1 + 0.2\n");
10    printf("Expected (Math) : 0.3\n");
11    printf("Computed Result : %.17f\n\n", c);
12
13    double x = 1e20;
14    double y = (x + 1) - x;
15
16    printf("Expression 2: (1e20 + 1) - 1e20\n");
17    printf("Expected (Math) : 1\n");
18    printf("Computed Result : %.0f\n", y);
19
20    return 0;
21 }
22

cd "c:\Users\DELL\OneDrive\Desktop\code\mohit1717\COA\Assignment 2>
Expression 1: 0.1 + 0.2
Expected (Math) : 0.3
Computed Result : 0.3000000000000004

Expression 2: (1e20 + 1) - 1e20
Expected (Math) : 1
Computed Result : 0
PS C:\Users\DELL\OneDrive\Desktop\code\mohit1717\COA\Assignment 2>
```

Q4

The screenshot shows a terminal window with the following content:

```
COA > Assignment 2 > ass2_4.c > main()
```

```
1 #include <stdio.h>
2
3 int main() {
4
5     float f = 1.0f / 3.0f;
6     double d = 1.0 / 3.0;
7
8     printf("Division: 1 / 3\n\n");
9
10    printf("float value : %.20f\n", f);
11    printf("double value : %.20lf\n", d);
12
13    printf("\nDifference (double - float): %.20lf\n", d - f);
14
15    return 0;
16 }
17
```

Below the code, there are tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is selected.

```
● PS C:\Users\DeLL\OneDrive\Desktop\code\mohit1717\COA\Assignment 2> cd "c:\Users\DeLL\OneDrive\Desktop\code\mohit1717\COA\Assignment 2"
Division: 1 / 3
float value : 0.33333334326744080000
double value : 0.3333333333333331000
Difference (double - float): -0.0000000093410748107
○ PS C:\Users\DeLL\OneDrive\Desktop\code\mohit1717\COA\Assignment 2> []
```

Q 5

The screenshot shows a terminal window with the following content:

```
COA > Assignment 2 > C ass2_5.c > main()
1 #include <stdio.h>
2 #include <float.h>
3
4 int main()
5 {
6     float x = FLT_MAX;
7     float y = FLT_MIN;
8
9     printf("Overflow example:\n");
10    printf("FLT_MAX = %e\n", x);
11
12    x = x * 10;
13    printf("After overflow = %e\n", x);
14
15    printf("\nUnderflow example:\n");
16    printf("FLT_MIN = %e\n", y);
17
18    y = y / 10;
19    printf("After underflow = %e\n", y);
20
21    return 0;
22 }
```

Below the code, there are tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, and PORTS. The TERMINAL tab is selected.

The terminal output is as follows:

```
cd "c:\Users\DELL\OneDrive\Desktop\code\mohit1717\COA\Assignment 2>
●
overflow example:
FLT_MAX = 3.402823e+038
After overflow = 1.#INF00e+000

Underflow example:
FLT_MIN = 1.175494e-038
After underflow = 1.175495e-039
PS C:\Users\DELL\OneDrive\Desktop\code\mohit1717\COA\Assignment 2>
```

Q 6

```
COA > Assignment 2 > C ass2_6.c > ⚙ main()
1  #include<stdio.h>
2  #include<float.h>
3
4  int main(){
5
6      float num= FLT_MIN;
7
8      printf("Normalized minimum values : %e\n",num);
9
10     num=num/2;
11     printf("Subnormal value : %e\n",num);
12
13
14     return 0;
15 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Normalized minimum values : 1.175494e-038
Subnormal value : 5.877472e-039

cd "c:\Users\DELL\OneDrive\Desktop\code\mohit1717\COA\A