GNG 1106 Practice Problems 1

Question 1 (8 points × 3 = 24 points) For each of the following code segments, check if it has the correct syntax. If not, correct it.

1.
```
int x, myFloat;
```

2.
```
int x, myFloat=0;
```

3.
```
int x=0;
scanf("%d", x);
```

Question 2 (10 points) What will be printed by the following code?

```
#include <stdio.h>

int main(void)
{
        int x=1, y=2, z=3;
        printf("x=%d, y=%d, z=%d\n", x, y, z);
        y=z;
        z=x;
        x=y;
        printf("x=%d, y=%d, z=%d\n", x, y, z);
        return 0;
}
```

Question 3 (14 points) What will be printed by the following code?

```
#include <stdio.h>

int jack(int a, int b)
{
        int tmp;
        tmp=a;
        a=b;
        b=tmp;
        return tmp-a;
}


int jackCaller(int a, int b)
{
        int tmp;
        tmp=jack(a, b);
        printf("a=%d, b=%d\n", a, b);
        return tmp;
}


int main(void)
{
        int a=30;
        int b=5;
        int c;

        c=jack(a, b);
        printf("a=%d, b=%d, c=%d\n", a, b , c);
        a=jack(b, c);
        printf("a=%d, b=%d, c=%d\n", a, b , c);
        printf("The output is %d\n", jackCaller(a, jackCaller(b, c)));
        return 0;

}
```

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Question 4 (20 points) Implement a function with the following prototype

void printBinaryRepresentationOfInteger(int a);

The function, when called, is to print a sequence of 8 binary values (0's and 1's) that is the binary representation of integer a that is between 0 and 255. For example, when calling the function by void printBinaryRepresentationOfInteger(7), it prints "00000111"; when calling the function by void printBinaryRepresentationOfInteger(9), it prints "00001001". To be more precise, every integer x in the range from 0 to 255 can be represented as

$$x = b_7 2^7 + b_6 2^6 + b_5 2^5 + b_4 2^4 + b_3 2^3 + b_2 2^2 + b_1 2^1 + b_0 2^0;$$

The function, when calling with a=x, essentially prints the sequence of numbers $b_7, b_6, b_5, b_4, b_3, b_2, b_1, b_0$.

NOTE: you are required to implement this function using loop or recursion. You will loose marks if you use other methods to implement the function, even if your implementation is correct.

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Question 5 (14 points) What will be printed by the following code?

```
#include <stdio.h>

int abc(int x)
{
        static int y=0;
        y=y+x/3;
        printf("in abc: x=%d, y=%d\n", x, y);
        return y;
}

int main(void)
{

        int x=33;

        while(1)
        {
                x=x-abc(x);
                printf("in main: x=%d\n", x);
                if (x<=0)
                        break;
        }

        return 0;
}
```

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Question 6 (18 points) What will be printed by the following code?

```
#include <stdio.h>

void haha(int x)
{
        double tmp;
        tmp= (double) x/2;

        printf("At a T intersection\n");

        if (x<=0)
                printf("Stop\n");
        else
        {
                if (tmp!= x/2)
                {
                        printf("make left turn\n');
                        haha(x-5);
                }
                else
                {
                        printf("make right turn\n");
                        haha(x-7);
                }

        }
}

int main(void)
{
        haha(28);
        return 0;
}
```

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