

QUICK TEST 4 (Thu 29 nov 10:15-10:35)

1. The following program is written to solve the non-linear equation $f(x) = x - \cos(x) = 0$.

```
#include <stdio.h>
#include <math.h>
double f(double x) {
    return (x-cos(x));
}
double fprime(double x) {
    return (1+sin(x));
}
int main()
{
    float dx=1, x=0.5;
    int i=0;
    while (fabs(dx) > 1e-12)
    {
        dx = -f(x) / fprime(x);
        x =x+dx;
        printf("%3d %17.12f %15e\n", ++i, x, dx);
    }
}
```

When the program is executed, it does not converge. Why? Please propose your corrections.

2. What is a stack? Include at least two operations that characterise it in your explanation.

3. What are the differences between a queue and a stack?

Continue in the next page

4. Consider the following program

```
# include <stdio.h>

void func(int a, int *b, int c){
    a = a + 100;
    *b = *b + 200;
    c = c + 300;
    printf("2nd printout: %d %d %d \n", a, *b, c);
}

int main(){
    int a = 10, *b, c = 30;
    b = &a;
    printf("1st printout: %d %d \n", a, *b);
    func(c, &a, *b);
    printf("3rd printout: %d %d %d \n", a, *b, c);
}
```

- a) What are the two values printed as the 1st printout? _____
- b) What are the three values printed as the 2nd printout? _____
- c) What are the three values printed as the 3rd printout? _____

Full name

Email

1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
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6. _____	_____

Further feedbacks
