

Aluno: Guilherme Afonso Alves Moraes

Matricula: 11711ECP012

Questão 01:

KANO0 = 3; KCUR0 = 3; KNUM0 = 4

KANO1 = 5; KCUR1 = 4; KNUM1 = 8

KANO2 = 4; KCUR2 = 2; KNUM2 = 4

Questão 02:

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
#define N 10
```

```
#define KANO0 3
```

```
#define KANO1 5
```

```
#define KANO2 4
```

```
#define KCUR0 3
```

```
#define KCUR1 4
```

```
#define KCUR2 2
```

```
#define KNUM0 4
```

```
#define KNUM1 8
```

```
#define KNUM2 4
```

```
float media_de_aleatorios(int ID) {
```

```
    int * p = (int *) malloc(N*sizeof(int));
```

```
    int i;
```

```
    float media = 0;
```

```
    for(i = 0; i < N; i++) {
```

```

        p[i] = rand()%9 + 1;

        media += p[i];

    }

    free(p);

    return media;

}

int main() {

    int ID0 = (KANO0+KANO1+KANO2)%9 + 1,

    ID1 = (KCUR0+KCUR1+KCUR2)%9 + 1,

    ID2 = (KNUM0+KNUM1+KNUM2)%9 + 1;

    srand(ID0*100+ID1*10+ID2);

    printf("1o: %f\n", media_de_aleatorios(ID0)/3);

    printf("2o: %f\n", media_de_aleatorios(ID1)/3);

    printf("3o: %f\n", media_de_aleatorios(ID2)/3);

    return EXIT_SUCCESS;

}

```

Questão 03:

Código Q3a:

```

#include <stdio.h>

#include <stdlib.h>

#include <math.h>

#define KANO0 3

#define KANO1 5

#define KANO2 4

```

```

#define KCUR0 3

#define KCUR1 4

#define KCUR2 2

#define KNUM0 4

#define KNUM1 8

#define KNUM2 4


double f(double x) {

    double y = 0.0;

    double PI = 4.0*atan(1.0);

    int ID2 = (KNUM0+KNUM1+KNUM2)%9 + 1;

    switch(ID2) {

        case 0: y = x*x-5*x+6; break;

        case 1: y = 2.0*PI*x; break;

        case 2: y = PI*x*x; break;

        case 3: y = 6*x/PI; break;

        case 4: y = x*x*2.0*PI; break;

        case 5: y = -x*x+5*x-6; break;

        case 6: y = 3.5*x-2.0; break;

        case 7: y = PI*x/2.0; break;

        case 8: y = -PI*x+0.1*x; break;

        case 9: y = 2.0*x-3.0*PI; break;

        default: y = 0.0;

    }

    return y;

}

```

```

int main() {

    int ID0 = (KANO0+KANO1+KANO2)%9 + 1,

    ID1 = (KCUR0+KCUR1+KCUR2)%9 + 1,

    ID2 = (KNUM0+KNUM1+KNUM2)%9 + 1;

    srand(ID0*100+ID1*10+ID2);

    double x, y; int i;

    FILE * arq;

    remove("dados.dat");

    arq = fopen("dados.dat", "ab");

    for(i = 0; i < 100; i++) {

        x = (double) rand()/RAND_MAX;

        y = f(x);

        fwrite(&y,sizeof(double),1,arq);

    }

    printf("Codigo: %d%d%d\n",ID0,ID1,ID2);

    fclose(arq);

    return EXIT_SUCCESS;

}

```

Código Q3b:

```

#include <stdio.h>

#include <stdlib.h>

#define KANO0 3

#define KANO1 5

```

```
#define KANO2 4
```

```
#define KCUR0 3
```

```
#define KCUR1 4
```

```
#define KCUR2 2
```

```
#define KNUM0 4
```

```
#define KNUM1 8
```

```
#define KNUM2 4
```

```
double media(double a, double b, double c) {  
    return (a+b+c)/3;  
}
```

```
int main() {  
    int ID0 = (KANO0+KANO1+KANO2)%9 + 1,  
        ID1 = (KCUR0+KCUR1+KCUR2)%9 + 1,  
        ID2 = (KNUM0+KNUM1+KNUM2)%9 + 1;  
  
    FILE * arq;  
  
    int idA, idB, idC;  
  
    double nA, nB, nC;  
  
    arq = fopen("dados.dat","rb");  
  
    if(arq == NULL) {  
        fprintf(stderr,"Arquivo inexistente!\n");  
        return EXIT_FAILURE;  
    }  
  
    switch(ID2) {  
        case 1: idA = 13; idB = 14; idC = 64; break;
```

```

        case 2: idA = 21; idB = 42; idC = 84; break;
        case 3: idA = 23; idB = 37; idC = 46; break;
        case 4: idA = 16; idB = 55; idC = 82; break;
        case 5: idA = 9; idB = 33; idC = 76; break;
        case 6: idA = 0; idB = 39; idC = 99; break;
        case 7: idA = 10; idB = 86; idC = 92; break;
        case 8: idA = 17; idB = 61; idC = 92; break;
        case 9: idA = 11; idB = 24; idC = 77; break;
        case 10: idA = 5; idB = 53; idC = 65; break;
        default: idA = idB = idC = 0;
    }

```

```

fseek(arq,0,SEEK_SET);

fseek(arq,1*sizeof(double),SEEK_SET);

fseek(arq,2*sizeof(double),SEEK_SET);

fread(&nA,sizeof(double),1,arq);

fread(&nB,sizeof(double),1,arq);

fread(&nC,sizeof(double),1,arq);


fclose(arq);

printf("Matricula: %d%d%d\n",ID0,ID1,ID2);

printf("Media [%lf %lf %lf] = %lf\n",nA,nB,nC,media(nA,nB,nC));

return EXIT_SUCCESS;

}

```

Questão 04:

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
#include <string.h>
```

```
#define KANO0 3
```

```
#define KANO1 5
```

```
#define KANO2 4
```

```
#define KCUR0 3
```

```
#define KCUR1 4
```

```
#define KCUR2 2
```

```
#define KNUM0 4
```

```
#define KNUM1 8
```

```
#define KNUM2 4
```

```
typedef
```

```
    struct Aluno {
```

```
        char nome[256];
```

```
        int matricula;
```

```
        unsigned int idade;
```

```
    }
```

```
Aluno;
```

```
void mostrar(Aluno aluno) {
```

```
    printf("> %s: MAT %03d\n: %u anos;\n", aluno.nome, aluno.matricula, aluno.idade);
```

```
}
```

```
void gravar(Aluno aluno) {  
  
    FILE * arq;  
  
    arq = fopen("registro.txt", "a+");  
  
    fwrite(&(aluno.nome), 256, 1, arq);  
  
    fwrite(&(aluno.matricula), sizeof(int), 1, arq);  
  
    fwrite(&(aluno.idade), sizeof(unsigned int), 1, arq);  
  
    fclose(arq);  
  
}
```

```
int ler(FILE * arq, Aluno * paluno, unsigned int id) {  
  
    fseek(arq, id*sizeof(Aluno), SEEK_SET);  
  
    int ok = fread(&(paluno->nome), 256, 1, arq);  
  
    fread(&(paluno->matricula), sizeof(unsigned int), 1, arq);  
  
    fread(&(paluno->idade), sizeof(int), 1, arq);  
  
    return ok;  
  
}
```

```
void inicia() {  
  
    remove("registro.txt");  
  
    Aluno aluno;  
  
    strncpy(aluno.nome, "Guilherme", 256);  
  
    aluno.matricula = 12;  
  
    aluno.idade = 20;  
  
    gravar(aluno);  
  
    strncpy(aluno.nome, "Oswald", 256);  
  
}
```



```

        aluno.matricula = rand()%999 + 1;

        aluno.idade = rand()%11 + 17;

        gravar(aluno);

        strncpy(aluno.nome, "Ermengardo", 256);

        aluno.matricula = 34;

        aluno.idade = 101;

        gravar(aluno);

        strncpy(aluno.nome, "Juriemo", 256);

        aluno.matricula = 75;

        aluno.idade = 12;

        gravar(aluno);

        strncpy(aluno.nome, "Silvia", 256);

        aluno.matricula = rand()%999 + 1;

        aluno.idade = rand()%15 + 17;

        gravar(aluno);

        strncpy(aluno.nome, "Mickey", 256);

        aluno.matricula = rand()%999 + 1;

        aluno.idade = rand()%9 + 17;

        gravar(aluno);

    }

```

```

int main() {

    int ID0 = (KANO0+KANO1+KANO2)%9 + 1,

        ID1 = (KCUR0+KCUR1+KCUR2)%9 + 1,

        ID2 = (KNUM0+KNUM1+KNUM2)%9 + 1;

    srand(ID0*100+ID1*10+ID2);

```

```
    Aluno aluno;

    FILE * arq;

    unsigned int i;

    inicia();

    arq = fopen("registro.txt", "r");

    i = 0;

    while(!feof(arq)) {

        if(!ler(arq, &aluno, i))

            mostrar(aluno);

        i++;

    }

    fclose(arq);

    return EXIT_SUCCESS;

}
```