

# Solução para os exercícios

## Grupo I

### I.1

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

void main(void)
{
    float medida;

    printf ("Entre valor em metros:\n");
    scanf("%f", &medida);
    printf("Valor lido: %f\nDecímetros: %f\nCentímetros: %f\nMilímetros: %f\n",
        medida,
        (float)(medida*10.0),
        (float)(medida*100.0),
        (float)(medida*1000.0));
}
```

### I.2

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

int main(void)
{
    printf("Tabuada 1 a 9:\n\n" );
    printf("\t1\t2\t3\t4\t5\t6\t7\t8\t9\n" );
    printf("1\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\n",1*1,1*2,1*3,1*4,1*5,1*6,1*7,1*8,1*9 );
    printf("2\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\n",2*1,2*2,2*3,2*4,2*5,2*6,2*7,2*8,2*9 );
    printf("3\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\n",3*1,3*2,3*3,3*4,3*5,3*6,3*7,3*8,3*9 );
    printf("4\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\n",4*1,4*2,4*3,4*4,4*5,4*6,4*7,4*8,4*9 );
    printf("5\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\n",5*1,5*2,5*3,5*4,5*5,5*6,5*7,5*8,5*9 );
    printf("6\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\n",6*1,6*2,6*3,6*4,6*5,6*6,6*7,6*8,6*9 );
    printf("7\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\n",7*1,7*2,7*3,7*4,7*5,7*6,7*7,7*8,7*9 );
    printf("8\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\n",8*1,8*2,8*3,8*4,8*5,8*6,8*7,8*8,8*9 );
    printf("9\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\t%d\n",9*1,9*2,9*3,9*4,9*5,9*6,9*7,9*8,9*9 );
}
```

### I.3

```
#include <stdio.h>

int main(void)
{
    int i;

    printf ("Entre inteiro : \n");
    scanf ("%d", &i);
    printf("Em octal %o\n", i);
    printf("Em hexa %x\n", i);
}
```

### I.4

```
#include <stdio.h>

int main(void)
{
    int i, ci;
    float f, cf;

    printf ("Entre fahrenheit float: \n");
    scanf ("%f", &f);
```

```

    cf = (f-32.0) * (5.0/9.0);
    printf("Celsius float %f\n", cf);

    printf ("Entre fahrenheit int : \n");
    scanf ("%d", &i);
    ci = (f-32) * (5/9);
    printf("Celsius int %d\n", ci);
}

```

## I.5

```

#include <stdio.h>
#include <math.h>

int main(void)
{
    int x, y;

    printf ("Entre dois inteiros : \n");
    scanf ("%d %d", &x, &y);

    printf("Soma: %d\n", x+y);
    printf("x*(y**2) %d\n", x*(y*y));
    printf("x**2: %d\n", x*x);
    printf("sqrt(x**2+y**2): %f\n", sqrt(x*x+y*y));
    printf("Seno(x-y): %f\n", sin(x-y));
    printf("Modulo(x): %d\n", x>=0?x:-x);
}

```

## Grupo II

### II.1

```

#include <stdio.h>

void main(void)
{
    int x, y, i;

    printf ("Entre dois inteiros!\n\n");
    scanf("%d %d", &x, &y);

    if (x < y)
        for (i = x; i <= y; i++) printf (" %d ", i);
    else if (x > y)
        for (i = x; i >= y; i--) printf (" %d ", i);
    else printf("Iguais!\n");
}

```

### II.2

```

#include <stdio.h>

void main(void)
{
    int i;

    printf ("Dec\tHexa\tChar!\n\n");

    for (i = 0; i < 128; i++) printf ("%d\t%x\t%c\n", i, i, i);
}

```

### II.3

```

#include <stdio.h>

void main(void)
{
    float preco;
}

```

```

printf ("Entre preco do produto:\n");

scanf("%f", &preco);

printf("Inflacao: %f\n", (preco < 100.0)*(preco*1.1)+(preco > 100.0)*(preco*1.2));
}

```

## II.4

```

#include <stdio.h>

void main(void)
{
    int x, y;
    char op;

    printf ("Entre x op y (op = '*' ou '+' ou '-' ou '/'):\n");

    scanf("%d %c %d", &x, &op, &y);
    switch (op) {
    case '*': printf("%d * %d = %d", x, y, x*y); break;
    case '-': printf("%d - %d = %d", x, y, x-y); break;
    case '+': printf("%d + %d = %d", x, y, x+y); break;
    case '/': printf("%d / %d = %d", x, y, x/y); break;
    default: printf ("Operador desconhecido!\n");
    }
}

```

## II.5

```

#include <stdio.h>

void main(void)
{
    float x , y;

    for (;;) { /* loop eterno */
        printf("Entre notas:\n");
        scanf("%f", &x);
        if (x == 50.0) break;
        scanf("%f", &y);
        if ( x <=10.0 && x >=0.0 && y >= 0.0 && y <= 10.0)
            printf ("Media: %f\n", (x+y)/2.0);
    }
    printf ("Fim do programa.\n");
}

```

## Grupo III

### III.1

```

#ifndef BOOL_TYPE
#define BOOL_TYPE
enum BOOL { FALSE, TRUE };
#endif

```

### III.2

```

#ifdef KR
int soma();
int subtracao();
#endif

#ifdef ANSI
int soma(int, int);
subtracao(int, int);
#endif

```

## Grupo IV

### IV.1

```
#include <stdio.h>

double potencia(double x, int exp)
{
    double temp = 1.0;

    if (exp==0) return 1.0;
    while (exp-->0) temp *= x;
    return temp;
}

void main() {

    float x;
    int exp;

    printf ("Numero/Potencia: ");
    scanf ("%f%d", &x, &exp);
    printf("Potencia: %f\n", potencia((double)x, exp));
}
```

### IV.2

```
#include <stdio.h>

int fatorial_rec (int n)
{
    if (n==0)
        return 1;
    else
        return n*fatorial_rec(n-1);
}

int fatorial_it (int n)
{
    int temp = 1;

    while (n > 0) {
        temp *= n;
        n--;
    }
    return(temp);
}

void main() {

    printf (" Fatorial recursivo de 4: %d\n", fatorial_rec(4));
    printf (" Fatorial iterativo de 4: %d\n", fatorial_it(4));
}
```

### IV.3

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

double potencia(double x, int exp)
{
    double temp = 1.0;

    if (exp==0) return 1.0;
    while (exp-->0) temp *= x;
    return temp;
}

double fatorial(double n)
```

```

{
  if (n==0)
    return 1;
  else
    return n*fatorial(n-1);
}

double lep (int e)
{
  double temp = 0.0, termo;
  double x,y;
  double i = 0.0;

  do {
    x = potencia((double)e,i);
    y = fatorial(i);

    //printf(" x = %g, y = %g termo =%g \n ", x, y, termo);
    //getchar();

    termo = potencia((double)e, i)/fatorial(i);
    i++;
    temp = temp + termo;
  } while (termo > 10E-6);
  return temp;
}

```

```

void main(void)
{
  int e;
  double x;
  char c;

  printf ("Entre expoente : ");
  scanf ("%d", &e);
  x = lep(e);
  printf ("e^%d = %f", e, x);
}

```

#### IV.4

```

#include <stdio.h>

int escolha (float valor) {

  int c;

  printf("Opcoes de pagamento: \n\n");
  printf("1) Opção: a vista com 10%% de desconto\n");
  printf("2) Opção: em duas vezes (preço da etiqueta)\n");
  printf("3) Opção: de 3 até 10 vezes com 3%% de juros ao mês (somente para compras acima
de R$ 100,00)\n");

  c = getch ();

  if (c == '3')
    if (valor < 100.00)
      c = 'i';
    else {
      printf ("Entre numero de pagamentos (3 a 10): ");
      scanf ("%d", &c);
    }
  return (c);
}

void main() {
float valor;

```

```

int c, aux;

printf (" Entre valor total: ");
scanf("%f", &valor);
c = escolha(valor);
switch (c) {
    case '1': printf("Total a ser pago: %.2f\n", valor*0.9);
              break;
    case '2': printf("Duas prestacoes de: %.2f\n", valor/2.0);
              break;
    case 3:   case 4: case 5: case 6: case 7: case 8: case 9: case 10:
              aux = c;
              while (aux > 0) { valor *= 1.03; aux--;}
              printf("%d prestacoes de : %.2f\n", c, valor/c);
              break;
    default: printf("Opcao invallida! \n");
}
}

```

## Grupo VI

### VI.1

```

#include <stdio.h>

#define TAM 10
#define MAX 65535 /* maximo para inteiros de 16 bits */

void main(void)
{
    int laco;
    int arranjo[TAM];
    int min = MAX;
    int max = 0;

    printf ("Entrar com 10 valores inteiros:\n");
    for (laco = 1; laco <= TAM; laco++) {
        printf ("Entre valor %d:\n ", laco);
        scanf("%d", &arranjo[laco]);
        if (min > arranjo[laco]) min = arranjo[laco];
        if (max < arranjo[laco]) max = arranjo[laco];
    }
    printf ("\n\nMinimo lido: %d", min);
    printf("\n\nMaximo lido: %d", max);
}

```

### VI.2

```

#include <stdio.h>

#define TAM 10
#define MAX 65535 /* maximo para inteiros de 16 bits */

void main(void)
{
    int i, j, temp;
    int arr[TAM];

    printf ("Entrar com 10 valores inteiros:\n");
    for (i = 1; i <= TAM; i++) {
        printf ("Entre valor %d:\n ", i);
        scanf("%d", &arr[i]);
    }
    for (i = 1; i < TAM; i++)
        for (j = i+1; j <= TAM; j++)
            if (arr[i] > arr[j]) {
                temp = arr[i];
                arr[i] = arr[j];
                arr[j] = temp;
            }
    printf ("\n\nArranjo ordenando: \n");
}

```

```

        for (i = 1; i <= TAM; i++)
            printf(" %d ", arr[i]);
    }

```

### VI.3

```

#include <stdio.h>

#define NUMNOTAS 5

float calc_media (float notas[]) {
    float media = 0.0;
    int i;

    for (i=1; i<=NUMNOTAS; i++) media += notas[i];
    return (media/NUMNOTAS);
}

void main(void)
{
    float notas[] = { 5.5, 7.6, 9.8, 7.2, 10.0 };

    printf("Media: %.2f", calc_media(notas));
}

```

### VI.4

```

#include <stdio.h>

#define SIZE 5

float *le_array (float valor[], int size) {
    int i;

    for (i=0; i<size; i++) {
        printf("Entre Float[%d]: ", i);
        scanf("%f", &valor[i]);
    }
    return (valor);
}

void main(void)
{
    float valores[SIZE];
    float *pfloat;
    int i;

    pfloat = le_array(valores, SIZE);
    for (i=1; i<=SIZE; i++)
        printf(" %f ", pfloat[i]);
}

```

### VI.5

```

#include <stdio.h>
#define SIZE 10
typedef int BOOL;

int media (int ai[]) {
    int i, temp;

    temp = 0;
    for (i=0; i<SIZE; i++) temp += ai[i];
    return (int)(temp/SIZE);
}

BOOL pertence (int val, int ar[]) {
    int achou = 0;
    BOOL i = FALSE;

    while (!achou && i < SIZE)

```

```
        if (ar[i] == val) achou = TRUE;
        else i++;
return(achou);
}

void main()
{
    int i;
    int arint[] = { 2, 3, 45, 5, 6, 7, 8, 9, 23, 12 };

    if (pertence(media(arint), arint))
        printf("Eh media!\n");
    else printf ("Nao eh!\n");
}
```