

Gabarito AP1 de Programação II

Segundo semestre

1. (2 Pontos) Questões de múltipla escolha:

Em PHP, qual das seguintes opções é usada para adicionar um elemento `$x` a um array `$a`, sem considerar a posição a ser inserida nem a chave:

- a) `$a.add($x)`
- b) `$a.push($x)`
- c) `$a = $a + $x`
- d) `$a[] = $x`
- e) `$a.insert($x)`

Resp.

d

2. (4 pontos) Escreva a função `pascal($l)` que permite gerar o triângulo de Pascal de nível `$l`. Assim, a chamada `pascal(8)` gera o seguinte resultado.

```

          1
        1 1
      1 2 1
    1 3 3 1
  1 4 6 4 1
1 5 10 10 5 1
  1 6 15 20 15 6 1
    1 7 21 35 35 21 7 1
      1 8 28 56 70 56 28 8 1
        1 9 36 84 126 126 84 36 9 1
          1 10 45 120 210 252 210 120 45 10 1
            1 11 55 165 330 462 462 330 165 55 11 1
              1 12 66 220 495 792 924 924 792 495 220 66 12 1
                1 13 78 286 780 1365 1924 2184 1924 1365 780 286 78 13 1
                  1 14 91 364 1092 2002 2708 3003 3003 2708 2002 1092 364 91 14 1
                    1 15 105 462 1456 2708 3771 4641 5005 5005 4641 3771 2708 1456 462 105 15 1
                      1 16 120 560 1848 3771 5616 7428 8008 8008 7428 5616 3771 1848 560 120 16 1
                        1 17 136 680 2380 5005 7428 9238 10005 10005 9238 7428 5005 2380 680 136 17 1
                          1 18 153 816 2925 6188 9238 11880 13000 13000 11880 9238 6188 2925 816 153 18 1
                            1 19 171 969 3527 7428 11058 14542 16797 17710 17710 16797 14542 11058 7428 3527 969 171 19 1
                              1 20 190 1140 4353 9238 14542 21879 27132 30030 30030 27132 21879 14542 9238 4353 1140 190 20 1
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                                      1 25 276 2016 9360 25225 43545 67245 83476 93601 99775 99775 93601 83476 67245 43545 25225 9360 276 25 1
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                                                                                                                 1 87 3618 104356 1312080 11920000 44968000 136500000 160000000 184760000 184760000 184760000 184760000 184760000 184760000 171840000 160000000 44968000 11920000 1312080 104356 3618 87 1
                                                                                                                 1 88 3706 108368 1372920 12512000 48184000 147150000 177100000 203980000 203980000 203980000 203980000 203980000 203980000 184760000 171840000 48184000 12512000 1372920 108368 3706 88 1
                                                                                                                 1 89 3795 112476 1435560 13120000 51536000 158580000 192400000 220200000 220200000 220200000 220200000 220200000 220200000 203980000 192400000 5
```

```

    }

    $k = $l - 1;
    foreach($res as $row){
        echo str_repeat("\t", $k--).implode("\t\t", $row)."\n";
    }
}

echo "<pre>";
pascal(8);
echo "</pre>";

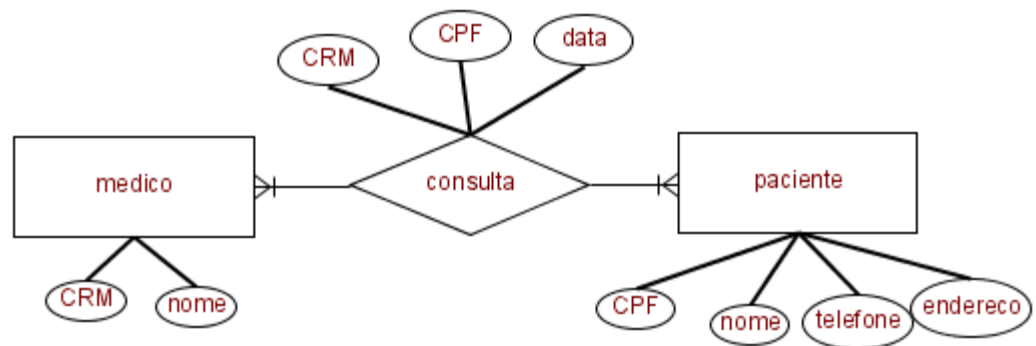
```

3. (4 Pontos) Suponha que lhe foi encomendada a construção de um sistema de agendamentos para a clínica dental X. A clínica possui um grupo de médicos e atende consultas nos dias úteis no horário de 14:00 até 19:00. Cada consulta toma exatamente 1 hora e sempre começa nas horas cheias, isto é, 14, 15, etc. Cada médico é registrado no banco de dados com seu nome e número do seu CRM (um número inteiro), enquanto que os pacientes são registrados com seus nomes, telefones e CPF. O sistema deverá agendar pacientes dependendo da disponibilidade de médicos no horário requerido.

Pede-se:

- i. Diagrama E-R para o banco de dados e

Resp.



Modelagem física do banco de dados

Resp.

```

CREATE TABLE paciente(
    CPF varchar(15) NOT NULL,
    nome varchar(50) NOT NULL,
    tel int(13) NOT NULL,

```

```

        PRIMARY KEY (CPF)
    );

CREATE TABLE consulta (
    data datetime NOT NULL,
    CRM int(11) NOT NULL,
    CPF varchar(15) NOT NULL,
    PRIMARY KEY (CRM, CPF)
);

CREATE TABLE medico (
    CRM int(11) NOT NULL,
    nome varchar(50) NOT NULL,
    tel varchar(20) NOT NULL,
    PRIMARY KEY (CRM)
);

```

- ii. Comandos SQL para inserir um novo médico com CRM 100012 e nome “José Alves” e o paciente “Jorge Pontual” com telefone 2222-3333 e CPF 123.456.789-34 no sistema.

Resp.

```

INSERT INTO medico (CRM, nome) VALUES(100012, "José
Alves");
INSERT INTO paciente (CPF, nome, tel)
VALUES("123.456.789-34", "Jorge Pontual", "2222-3333");

```

- iii. Comando SQL para marcar a consulta do paciente “Jorge Pontual” com o médico “José Alves” no dia 21 de outubro de 2009 às 15 horas.

Resp.

```

INSERT INTO consulta (CRM, CPF, data) VALUES(100012,
"123.456.789-34", 2008-10-21 15:00);

```