Oracle	Name:
Practice	Class:
Index	Date:

The table **PRODUCT** has the following content:

ROWID	PID	PNAME	PTYPE	PRICE
A2	1	Coca Cola	drink	2.3
C2	2	Ham sandwich	sandwich	2.5
B1	3	Salami sandwich	sandwich	2.5
D2	4	Hot Dog	sausage	3.0
A1	5	Fanta	drink	2.1
C1	6	Vienna Sausage	sausage	2.8
B2	7	Bratwurst	sausage	3.5
E2	8	Sprite	drink	2.3
E1	9	Frankfurters	sausage	2.4
D1	10	Ice Tea	drink	1.9

Next ROWIDs: `F1, F2, G1, G2`

Create a Bitmap Index on the **PTYPE** column:

Show the execution of the following SQL Statements:
```
SELECT ptype,
       count(*)
FROM   product
GROUP BY ptype;
```

Show the changes in the Bitmap Index:
`INSERT INTO product VALUES (11, 'Knackwurst', 'sausage' 1.8);`

Show the changes in the Bitmap Index:
`INSERT INTO product VALUES (12, 'Fries', 'vegetarian' 1.4);`

Open the webpage
https://www.cs.usfca.edu/~galles/visualization/BPlusTree.html and
add the data of the index attribute **PRICE**.

Show the content of the BTree Index:

How is the following SQL Statement executed?
SELECT *
FROM   PRODUCT
WHERE   PRICE = 2.8;

Use the webpage to check the result of the Btree Index of the following SQL Statement:
INSERT INTO product VALUES (11, 'Knackwurst', 'sausage' 1.8);

Create a Hash Index on the **PNAME** column:

Algorithm: Use the first character of the **PNAME** column und use the alphabetical order. The result MOD 10 gives you the hash result.

How is the following SQL Statement executed?
```
SELECT *
FROM    PRODUCT
WHERE   PNAME = 'Sprite';
```

What are the changes in the index of the following SQL Statement?
```
INSERT INTO product VALUES (11, 'Knackwurst', 'sausage' 1.8);
```