Sample Assignment 1, 2020-09-14

Question 1 (Bitwise Operations). Write the output (and the content of variables `a,b,c` in hexadecimal notation), after this snipped is executed:

```
unsigned int a = 0xACE02468;
unsigned int b = (a << 12) & (a >> 20);
unsigned int c = (a << 12) | (a >> 20);
std::cout << std::hex << "a = " << a << std::endl;
std::cout << std::hex << "b = " << b << std::endl;
std::cout << std::hex << "c = " << c << std::endl;
```

Hexadecimal memory content of `a`: _____

Hexadecimal memory content of `b`: _____

Hexadecimal memory content of `c`: _____

Please note that unsigned ints are 4 bytes long. If you do left shift (respectively, a right shift) on such variables, the bits on the right (respectively, on the left) are filled with zeroes.

Question 2. Draw a flowchart for this `switch-case` statement. Use only 5 kinds of nodes:

(1) Start node (oval: one outgoing arrow).

(2) Stop node (oval: one incoming arrow).

(3) Conditional statement (diamond: one incoming and two outgoing arrows). Mark the "true" branch.

(4) Regular statement (rectangle: one incoming and one outgoing arrow).

(5) Merging two branches (black dot: two incoming arrows, one outgoing arrow).

```
int x = 0;
char c;
cin >> c;
switch( c ) {
    case 'A':
        x += 1;
    case 'B':
        x += 2;
        break;
    default :
        x += 4;
}
cout << "x= " << x << endl;
```

Question 3 (Side Effects).
What is the value of `x` output by the code snippet above, if `cin` inputs letter `'A'`?

`x=`: _____