

1. Color is usually represented as RGBA 4-tuple data. (A for alpha channel, the opacity, 255 means a solid color) Each tuple can be of 8-bit data (0-255).

Now, if we have the need to pack 4 unsigned char color tuples into an unsigned short int. Say,

Red: 0110 0100  
Green: 0010 0010  
Blue: 1101 0001  
Alpha: 1111 1111

Into an unsigned short integer:

R	G	B	A
0110	0010	1101	1111

Each color, you just pick the 4 most significant bits (by integer division or bit extraction)

You may need the following masks:

```
uint16_t set_red_mask   = 0b1111000000000000  
uint16_t set_green_mask = 0b0000111100000000  
uint16_t set_blue_mask  = 0b0000000011110000  
uint16_t set_alpha_mask = 0b0000000000001111
```

```
uint16_t unset_red_mask   = 0b0000111111111111  
uint16_t unset_green_mask = 0b1111000011111111  
uint16_t unset_blue_mask  = 0b1111111100001111  
uint16_t unset_alpha_mask = 0b1111111111110000
```

You may use uint8\_t data type for original color, uint16\_t for the return color.

Write the function

```
uint16_t pack(uint8_t red, uint8_t green, uint8_t blue, uint8_t alpha){  
    /* put your code here to pack the 4 colors into an uint16_t data */  
    return packed_color;  
}
```

Also, write the main program to test this pack function.

Note: You may need to perform a lot of division, shift, or masking/unmasking operations.

2. Finish Solo Learn C++ module 1 practices. (if you haven't)

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