

# Homework 6

```
def calculate_iou(rect1, rect2):
    # Extract coordinates and dimensions from rectangles
    x1, y1, w1, h1 = rect1
    x2, y2, w2, h2 = rect2

    # Calculate coordinates of intersect rectangle
    intersect_x1 = max(x1, x2)
    intersect_y1 = max(y1, y2)
    intersect_x2 = min(x1 + w1, x2 + w2)
    intersect_y2 = min(y1 + h1, y2 + h2)

    # Calculate area of intersect rectangle
    intersect_area = max(0, intersect_x2 - intersect_x1) * max(0, intersect_y2 - intersect_y1)

    # Calculate area of each rectangle
    area_rect1 = w1 * h1
    area_rect2 = w2 * h2

    # Calculate union area
    union_area = area_rect1 + area_rect2 - intersect_area

    # Calculate IOU
    iou = intersect_area / union_area if union_area > 0 else 0

    return iou
```

