Collision Detection 2017 Winter Exam

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3(a)(i) Binary Image Overlap Testing

(a)(ii)

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(60,102,195,153,153,195,102,60)

(a)(iii)

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| 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
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(a)(iv)

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The pixels of the sprites overlap so collision would occur.

3(b)(i)

They are not accurate because they can’t rotate.

In modern game engines they are used to deal with the ‘handshake’ problem.

This reduces the number of areas that need to be checked for collision. Before everything would have to be checked against each other.

(b)(ii)

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|  | X axis |  |  |  |  |  |  |  |  |
|  |  | Bs | Cs | Bf | Cf | Ds | As | Df | Af |
|  | Sorted | 110 | 130 | 150 | 170 | 375 | 400 | 405 | 420 |
|  | Active | B | B,C | C | null | D | D,A | A | null |
|  | Collision |  | (b,c) |  |  |  | (D,A) |  |  |
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|  | Y Axis |  |  |  |  |  |  |  |  |
|  |  | Bs | Cs | As | Ds | Bf | Cf | Af | Df |
|  | Sorted | 280 | 285 | 290 | 295 | 300 | 305 | 310 | 315 |
|  | Active | B | B,C | B,C,A | B,C,A,D | C,A,D | A,D | D | null |
|  | Collision |  | (B,C) | (B,A)(C,A) | (B,D)(C,D)(A,D) |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
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|  | Z Axis |  |  |  |  |  |  |  |  |
|  |  | Bs | Bf | Cs | Cf | As | Af | Ds | Df |
|  | Sorted | 80 | 120 | 295 | 305 | 480 | 520 | 599 | 601 |
|  | Active | B | null | C | null | A | null | D | null |
|  | Collision |  |  |  |  |  |  |  |  |

Collision does not occur.